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THE  
COMMENTARIES  
UPON THE  
APHORISMS

OF  
Dr. HERMAN BOERHAAVE,

The late Learned Professor of Physic in the  
Univerfity of LEYDEN,

CONCERNING

The KNOWLEDGE and CURE of the feveral  
DISEASES incident to HUMAN BODIES.

By GERARD VAN SWIETEN, M.D.

Translated into ENGLISH.

V O L. XII.

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THE  
AUTHOR'S PREFACE  
TO THE  
Fourth VOLUME of this WORK,

Printed at LEYDEN, in Quarto.

**I** HERE present the public with a FOURTH VOLUME, which I thought, nay, which I promised, should be the last.

But the number of observations, and the quantity of materials collected, from a constant perusal of the best Authors, made it impossible for One Volume to comprize the remainder of my work.

I shall endeavour to complete my undertaking with the same care which I have hitherto shewn; and hence I can easily foresee, that what remains, with the general Index, will make a volume of a proper size, and that will positively be the last.

THE-

THE  
CONTENTS  
OF THE  
TWELFTH VOLUME.

	Page.	Sect.
<b>O</b> F a Phthifis Pulmonalis ———	I	1196
Other Consumptions ——— ———	223	1214
The Dropsy ——— ———	226	1215

COM.



# COMMENTARIES

UPON THE

## APHORISMS

OF

HERMAN BOERHAAVE,

CONCERNING THE

KNOWLEDGE and CURE of DISEASES.

---

*Of a* PHTHISIS PULMONALIS.

S E C T. MCXCVI.

**I**F an ulcer has so far consumed the lungs, as that the whole habit of the body is wasted, the patient is said to have a phthisis pulmonalis.

The word phthisis, which is derived from the Greek verb φθίνειν, sometimes signifies a corruption, but more frequently a consumption or decay. Thus the month near its end is called φθίνων Μῆν; and the same term is used to express the sun declining from its meridian to its setting: for authors seem indeed to have used the word φθίσις in a direct opposite sense to αὐξήσις, i. e. increase: so that they said φθίσις γίνεσθαι τῇ σελήνῃ, to express the moon's being in the

VOL. XII. B wain.

2      Of a PHTHISIS PULMONALIS. Sect. 1196.  
 wain. But these things are to be seen more at  
 large in lexicons, &c. Physicians having remark-  
 ed, that the plumpness of the body gradually de-  
 creased in an ulcer of the lungs, so that scarce any  
 thing but skin and bones seemed to be left some  
 time before death, they gave to this disease the  
 name of a phthisis or consumption. This *Galen*<sup>a</sup>  
 confirms, for after he had said, *phthisis est ulceratio*  
*pulmonis, vel thoracis, vel faucium, ut & tussiculæ &*  
*debiles comitentur febres, & corpus contabescat.* “ A  
 “ phthisis is an ulcer of the lungs, or chest or fauces,  
 “ attended by a cough and a slow fever, and a  
 “ wasting of the body,” he presently subjoins, and  
 it receives its name *απο τῆ φθίειν*.

The name *φθον* was also given to this disease.  
*Galen* indeed made a distinction between these two  
 words<sup>b</sup>, for he calls every decay and wasting of the  
 body a *phthisis*; but would have us understand by  
*pthoe*, that particular decay which proceeds from an  
 ulcer: however, in the definition of a phthisis, which  
 we have just quoted, he mentions an ulcer of the  
 lungs, &c. as the cause. But *Aretæus*<sup>c</sup> indeed acknow-  
 ledges the forming of pus as the cause of a phthisis:  
 so that he calls this disease by the names of *πύη*,  
 pus, and *φθίσις*, wasting; but at the same time he  
 tells us, this appellation is proper when the disorder  
 takes its rise from an imposthume in the lungs, af-  
 ter a spitting of blood, or cough of long standing;  
 but when from an abscess being formed in the tho-  
 rax or side, the lungs are corroded by the pus col-  
 lected in their neighbourhood, then he would have  
 the disease called *φθον*.

*Aetius*<sup>d</sup> gives a still more confined sense to the  
 word phthisis, restraining this term to signify an  
 ulcer of the lungs, in consequence of a spitting of  
 blood;

<sup>a</sup> Definit. Medicar. N°. 260, 261. Charter. Tom. II. pag. 262.  
<sup>b</sup> Definit. Medicar. N°. 260, 261. Charter. Tom. II. pag. 262.  
<sup>c</sup> De caus. & sign. morb. diuturn. Lib. I. Cap. VIII. pag. 36.  
<sup>d</sup> Lib. VIII. Cap. LXXV. pag. 174. versa.



Sect. 1196. Of a PHTHISIS PULMONALIS. 3

blood; but when the lungs have been corroded and ulcerated from a very acrid catarrh, he calls this complaint pthoe\*. He owns, nevertheless, that a phthisis sometimes is the consequence of a pleurisy, or a peripneumony.

Thus much may suffice concerning the name of this disease. It appears, however, that this complaint is promiscuously called phthisis, pthoe, and tabes; custom principally determines the force and meaning of words.

A phthisis therefore is a wasting of the whole habit of the body from a purulent matter: such a wasting may be caused by collections of pus residing in various parts of the body, as shall be explained in §. 1214. For this reason we add here the epithet pulmonalis, both because this is more frequent than the others, and because it very often happens that the lungs become affected in time, although the disorder first took its rise from a collection of pus in some other part of the body. Three things are therefore required to constitute the existence of a phthisis pulmonalis: 1. A slow wasting of the whole body: 2. The cause of this wasting must be a depravation of the humours from a putrid cacochymia: 3. The seat of the disease must be in the lungs.

For when persons are afflicted with a catarrh, we see matter discharged from the nose, and spit out in coughing, which resembles pus in colour, thickness, and other qualities: but the patients are not said to have a phthisis, because the habit of the body is not wasted, nor are there any symptoms of a putrid cacochymia in the fluids; yet if the matter of the catarrh be very acrid, or a long and violent cough should shake the lungs too much, they may sometimes be corroded, and an ulcer be formed in them, and thus a phthisis pulmonalis may be produced by a catarrh.

\* Ibid. Cap. LVII. pag. 167.

## S E C T. MCXCVII.

**S**UCH an ulcer may be produced by every cause capable of obstructing the passage of the blood through the lungs, in such a manner as to convert it into putrid matter.

From the definition just given, this is evident of course. In order for a disease to be called a phthisis pulmonalis, there must be a putrid cacochymia in the fluids, and the lungs must be the part affected: whatever therefore can produce this effect, may justly be called the cause of a phthisis pulmonalis; and that many such causes exist, the following aphorisms will shew, in which they are enumerated in order.

## S E C T. MCXCVIII.

**T**H E S E causes may be referred to that disposition of the body by which persons are liable first to an hæmoptysis, and then to an ulcer of the corroded part.

A phthisis pulmonalis very frequently follows an hæmoptysis; but it has also been observed to be produced without this previous complaint, as *Aretæus*<sup>f</sup> seems to hint, and as will appear from what we shall remark hereafter.

*Fernelius*<sup>g</sup> takes notice, that a great controversy has arisen among authors, whether any one falls into a consumption without some excretion of blood: but he declares that he has seen not a few die of a slow consumption, although no bloody excretion has

<sup>f</sup> De caus. & sign. morb. diuturn. Lib. I. Cap. viii. pag. 36.

<sup>g</sup> Patholog. Lib. V. Cap. x. pag. 110.



Sect. 1198. Of a PHTHISIS PULMONALIS. 5

has appeared in the whole course of the disease. The same thing is confirmed by many others who have treated of a phthisis, and I believe every physician in great practice must have seen cases of the same kind.

Hæmoptoe and hæmoptysis, are names given by physicians to a discharge of blood from the lungs with a cough, and a sort of noise in the breast. *Celsus* gives the name of spitting of blood to every discharge of blood issuing from the mouth, whether it proceed from the gums, fauces, or nostrils<sup>h</sup>. *Aretæus* chooses to make nicer distinctions<sup>i</sup>; for when the discharge of blood proceeds from the head, palate, fauces, &c. he calls it simply πύσις, or αιμορραγία; but if it proceeds from the breast and the viscera situated there, especially the lungs and aspera arteria, then he calls it ἀναγωγή, because the blood in this case ascends. *Trallian*<sup>k</sup> also used this term to express this symptom: but as the prognostics are very different when the blood proceeds from the internal parts of the mouth, or falling from the nose, so the fauces is discharged from thence; and when it comes from the lungs, and as even a different treatment is required, the physician must be careful to distinguish from whence the hæmorrhage proceeds; and great attention is necessary here.

If blood be thrown out with a cough, it is esteemed an almost certain sign that it comes from the lungs; though this symptom may deceive. I was called to a young man, who was taken in his sleep with a bleeding at the nose; and as he lay with his head bent back, the blood falling through the internal foramina of the nostrils into the fauces, excited a cough, which waking him, he threw up blood; which greatly terrified him, fearing he had an hæmoptysis. I immediately directed him to wash

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his

<sup>h</sup> Lib. IV. Cap. iv. N<sup>o</sup>. 5. pag. 202.  
morb. acut. Lib. II. Cap. II. pag. 12.  
pag. 285.

<sup>i</sup> De caus. & sign.  
<sup>k</sup> Lib. VII. Cap. I.

6      Of a PHTHISIS PULMONALIS. Sect. II 198,  
his mouth and fauces with warm water, and to sit  
up in bed, bending his head a little forwards.  
Hereupon a violent bleeding at the nose began, and  
continued for a whole hour; but there was no  
longer any cough or spitting of blood: however,  
he could hardly overcome the fear of an hæmop-  
tysis, which he had conceived from this accident.

It once happened, that I myself felt a slight  
tickling in the fauces, and soon after spit up bloody  
spittle; an irritating cough succeeded, and spittle  
tinged with blood. Opening my mouth before a  
mirror in the light of the sun, I discerned on the  
right side near the uvula, in the fleshy palate, a  
small red capillary artery; the mouth of which being  
open, distilled a very small drop of blood nearly every  
second. I then easily conceived, how a cough might  
be excited by such a drop falling on the aspera ar-  
teria: at the same time I had the evidence of my  
sight to shew me, that such a vessel being dilated,  
distilled blood by anastomosis, *i. e.* by the opening  
of its extreme orifice. This distillation ceased in  
about half an hour, and the vessel contracting by  
degrees, became undiscernible three hours after-  
wards, as it was so small, that in its natural state  
it did not admit red globules of blood: it has thrice  
happened to me since to observe the same thing in  
other persons. If now we reflect, that a vessel so  
dilated may be seated in the back part of the fleshy  
palate near the fauces, all the same symptoms might  
occur, and yet the cause not be visible to the eye.

Perhaps such cases frequently happen; and it  
gave me pleasure to find that Galen<sup>1</sup> has remarked  
this: *Nos vero eum (sanguinem) a capite, per gurgu-  
lionis præcipue partes internas ad fauces affatim descen-  
dentem, tussiendo educi sæpenumero conspeximus; nam  
subito largus irruens tussim movet. Quare diligenter  
advertere animum oportet, ne aliquando hujusmodi san-  
guinem*

<sup>1</sup> De Locis Affectis, Lib. IV. Cap. VIII. Charter. Tom. VII.  
pag. 466.



Sect. 1198. Of a PHTHISIS PULMONALIS. 7

*guinem ex spiritalibus organis ascendere putemus.* “ We have often seen the blood descending in abundance from the head by the internal parts, principally of the œsophagus, and thrown up by coughing; for coming suddenly on the larynx, it excites a cough, wherefore we should be careful lest we should by mistake suppose this blood to ascend from the organs of respiration.” For which reason he very justly admonishes us, in the same chapter, to examine carefully the inside of the mouth and the nostrils, where there is the least doubt of the part from whence the blood comes, which is thrown up. He observed a vomiting of blood, occasioned by a leech swallowed in water by a thirsty man: and in the case of a young man, who bled at the nose and spit blood, he discovered a leech hid in the nostrils.

*Aretæus*<sup>m</sup> makes the like remarks concerning blood descending from the head and palate, and occasioning a fallacious appearance of an hæmoptoe.

The ancient physicians very wisely observe, that there are three ways by which the blood may issue from the vessels of the lungs, and cause an hæmoptysis: 1. Either the vessels may be burst by some external violence; and this they called *ρήξις*<sup>n</sup> (*Celsus*<sup>o</sup> says it was called *ρήγμοχασμός*, a word derived from *ρηγνυμι*, to break, and *χασμος*, a hiatus or chasm): or, 2dly, When by the acrimony of the circulating fluids themselves the vessels were corroded; and this was called *διαβρωσις*: 3. The third species of an hæmoptysis, was that in which the vessels were neither burst nor corroded, but the blood issued from their dilated extremities. This, by a very apt term, they called *ἀνατόμωσις*. *Aretæus*<sup>p</sup> uses the word *ἀραιώσις*, to express the same thing: which word also signifies

B 4

fies

<sup>m</sup> De caus. & sign. morb. acut. Lib. II. Cap. 11. pag. 12.

<sup>n</sup> Aretæus. Ibid. pag. 13. Galen. de usu part. Lib. VII. Cap.

III. Charter. Tom. IV. pag. 452. <sup>o</sup> Lib. IV. Cap. IV.

pag. 203. <sup>p</sup> Ibidem.

fies rarefaction and relaxation. Thus in *Galen* we frequently read of *αραιώτινα φάρμακα*, attenuating medicines, as opposed to those remedies which were termed *πυκνώτινα*, or condensing.

But as both the prognostics and the cure are very different, according to which of these three different causes it is that brings on an hæmoptysis, it will be worth while to speak of the diagnostics of each.

We have reason to think an hæmoptysis arises from a rupture of the vessels, if those causes from which such a rupture may be feared have preceded. Thus, if a person spits blood presently after a blow, a fall, lifting a great weight, shouting, anger, &c. we conclude a rupture of the vessels to have been effected by a great strain upon the lungs<sup>a</sup>. There is some danger in a sudden rupture of the larger vessels, of speedy death, from the copious discharge of blood; and many such cases have been observed by physicians. But if the person escapes this first danger, there are great hopes of a cure; *rupturæ enim facilior solidatio est, quia vulneris labia mutuo se contingunt*; “for the cure of a rupture of the vessels “ (says *Aretæus*<sup>r</sup>) is the easier, because the lips of the “ wound touch one another;” for when the wound is fresh in a body, in other respects sound, if all those things are done which will be mentioned, §. 1200. there may be hopes of closing up the ruptured vessel.

But when an hæmoptysis is the consequence of the vessels being corroded, the cure will be much more difficult. *Aretæus*<sup>s</sup> well observes, *ulcus enim, non vulnus efficitur*, “that in this case an ulcer is “ produced, not a wound:” it is very evident, that ulcers produced in the lungs, from their being corroded by acrimonious fluids, must be of more difficult cure than a recent wound from some violent cause. An hæmoptysis may be known to proceed from the vessels being corroded, if no  
external

<sup>a</sup> *Aretæus* ibidem.    <sup>r</sup> *Ibidem*. pag. 14.    <sup>s</sup> *Ibid*. pag. 15.



Sect. 1198. Of a PHTHISIS PULMONALIS. 9

external force has been applied ; if a long irritating cough has preceded, if some pain has been felt in the inside of the thorax, if the blood be spit out in small quantities, but almost continually, or if at least the spitting of blood returns often ; for when the vessels are burst, the hæmorrhage is copious, but soon stops. For this reason *Christopher Bennet*, a celebrated physician of *London*, in the last century, who has writ an excellent treatise on this disease, although in a difficult style, has laid down this prognostic<sup>t</sup> : *Sanguis per vices in pectus confertim fluens minus periculosus, quam qui sensim & jugiter emanaret ; fluxio enim periodica, licet copiosior ἀναστομώσεως, jugis pedetentim facta ἀναερώσεως symptoma.* “ The  
 “ blood flowing in large quantities at intervals, is  
 “ less dangerous than that which is discharged  
 “ gradually, but constantly ; for a periodical dis-  
 “ charge, although copious, is a sign of an anasto-  
 “ mosis, a constant one issuing drop by drop, shews  
 “ the vessels to be corroded.”

When the mouths of the vessels being dilated by anastomosis, pour the blood upon the air-vessels of the lungs, which is thrown up from them easily by a slight cough, the danger is far less, for the vessels, although dilated, still remain entire, and the fluids are found (else an erosion of the vessels would rather ensue than an anastomosis) for as soon as the blood is able to pass through the extremities of the vessels, their dilatation decreases, and contracting themselves by their own elasticity, they soon become too narrow to transmit the red blood any longer, but only the fluids which usually pass through them, and which are more attenuated than blood. For in a natural state, the red blood never transudes into the bronchia or air-vessels of the lungs, but only fluids secreted from the blood, which moisten and lubricate the whole internal surface of the bronchia. In the instance related a little above  
 it

<sup>t</sup> Pag. 106. tabid. theatr.

10 Of a PHTHISIS PULMONALIS. Sect. 1198.

it appears, that the dilated vessel in the fleshy palate, which on account of the red blood contained in it, was obvious to the sight, became invisible in a few hours, by contracting to its usual and natural size.

*Aretæus* <sup>u</sup> remarks, that this kind of hæmoptysis happens to women labouring under a suppression of the menses, and that it comes on at the time when the menstrual discharge should return, if they were in good health; and unless it be cured, frequently returns. But we shall speak of these cures hereafter in this section; and then it will also appear, that the cure of such an hæmoptysis is not to be neglected, although it be less dangerous than the others. But as an hæmoptysis does not end in a phthisis pulmonalis, unless it cause an ulcer in the lungs, we are to consider how this is produced.

If the hæmoptysis be occasioned by a rupture of the vessels, this is a true wound, and all the circumstances which attend a recent wound, exist in this case also, and are to be observed by a careful physician: these were treated of §. 158. It was said there, N<sup>o</sup>. 1. that the wounded parts receded gradually more and more from each other; the same thing happens here; for unless a large vessel is burst, which pours forth a great quantity of blood at once, an hæmoptysis begins. The patient spits but little blood at first, but the quantity soon increases; afterwards it decreases again, and if the patient keeps quiet, generally ceases soon, but so as that a thin saliva, a little tinged with red, is spit out. As in a wound visible to the eye, we perceive the lips of the wound grow red, and painful, and swell, and a slight fever comes on if the wound be at all considerable; thus it happens also in the lungs, for a cough arises, and sometimes also a slight sensation of pain; after this, as pus appears in a wound, so here also purulent matter is thrown up, which, if it appear only in a small quantity,



Sect. 1198. Of a PHTHISIS PULMONALIS. 11

quantity, forebodes no harm, for under this pus the wound heals, as plainly appears in an external wound. After a quiet sleep, the patient is observed to spit up well concocted pus, which ceases to be excreted when the wound is closed up. It is, however, to be noted, that the cure of a wound in the lungs, often takes longer time than in an external part of the body; for the air cannot be excluded, and the lungs, on account of their office in respiration, can never be otherwise than in motion: on this account, physicians wisely recommend rest in an hæmoptysis, forbid speaking, prescribe the mildest food, and caution against any passions of the mind, that the lungs may be as little fatigued as possible. Nor is this so much to prevent the return of the hæmoptysis, as that the ruptured vessel may more speedily be closed up; if the ruptured vessel be of a very small diameter, the cure is often compleat, so as that the patient remains free the rest of his life, not only from a phthisis, but even from an hæmoptysis; but when larger branches of the vessels are broken, the wound will enlarge more, a greater quantity of pus will be formed, and there will be great danger, that the suppuration begun about the lips of the wound, should be propagated through the soft substance of the lungs, and bring on a phthisis pulmonalis: for this reason, Hippocrates \* remarks, *Tabes periculosissimæ sunt, quæ a ruptione crassarum venarum*, “ that those consumptions are most dangerous which arise from a  
“ bursting of the large vessels.”

Another reason, why an ulcer of the lungs is often the consequence of an hæmoptysis, is deduced from the fabric of this viscus: if the lungs, after being inflated are dried, and then cut asunder, they appear entirely cellular, not only because the extremities of the bronchia terminate in hollow membranes, but there plainly appears a cellular membrane,

\* Coac. Prænot. N<sup>o</sup>. 438. Charter. Tom. VIII. pag. 878.

brane, which fills up the interstices left between these small vesicles, in which the bronchia terminate, as is plainly seen by the help of a microscope, after the vessels of the lungs have been filled by injections; if it happen that these vessels being broken, the blood is thrown upon this cellular membrane, this extravasated stagnating blood growing putrid and acrid, may produce a suppuration, and an ulcer of the lungs; for the extravasated blood, which obstructs the air-vessels of the lungs, may easily be thrown off by a cough; but that blood which is collected in the cellular membrane of this viscus, cannot find an issue this way, till, having corroded the nearest bronchia, it finds a passage. The observations of *Hippocrates* \* seem to confirm what we have said; for thus he speaks, when he is enumerating the causes from whence matter may be formed in the lungs: *Quum venularum quædam in ipso rupta fuerit; rumpitur autem a laboribus: Et cum rupta fuerit si crassior fuerit venula, plus fundit sanguinis, si vero tenuior minus; partimque quidem confestim sanguinem expuit, partim vero nisi constricta vena fuerit, in pulmonem funditur, in eoque putrescit; cumque putruerit pus facit. Procedente vero tempore interdum pus sinerum, interdum subcruentum, Et si uberius repleta fuerit venula ipsa sanguinis copiam confestim a se evomit, pus-que crassum ab ipsa accedente ac intus putrescente pituita expuitur.* “ When some  
 “ one of the veins in the lungs is burst, which may  
 “ happen from a strain; in this case, if the vein  
 “ be somewhat large, it discharges a greater quan-  
 “ tity of blood; but if it be smaller, less; and part  
 “ of the blood is suddenly thrown up by the mouth;  
 “ and part, unless the vein be contracted, is thrown  
 “ upon the lungs, and there putrifies, and then  
 “ forms pus, which in process of time is sometimes  
 “ pure pus, and sometimes mixed with blood;  
 “ and if the vein was very full, it throws out  
 “ at

\* De morb. Lib. I. Cap. v. Charter. Tom. VII. pag. 537.



Sect. 1198. Of a PHTHISIS PULMONALIS. 13

“ at once a great quantity of blood, and thick pus  
 “ is afterwards excreted, being formed from the  
 “ pituita flowing upon the lungs, and growing pu-  
 “ trid ; for in this passage an hæmoptysis is first de-  
 “ scribed, and then an ulcer, caused by blood fall-  
 “ ing on the lungs, and growing putrid there ;  
 “ which ulcer either discharges pure pus, or pus  
 “ mixed with blood ; when the neighbouring ves-  
 “ sels are corroded, a great quantity of blood is  
 “ discharged.”

From hence we understand, why *Hippocrates* <sup>y</sup> says, in his aphorisms, *a sanguinis sputo, puris spu-  
 tum malum*, “ spitting pus after spitting blood, is  
 “ a bad sign ;” for this is not to be understood  
 of that spitting of pus in small quantity, which  
 shews, that the vessel which was burst begins  
 to close, as was said a little before, but of such  
 a spitting as discharges the pus in great quantities,  
 and as lasts a long time, and thus shews that  
 an ulcer is formed in the lungs : whence *Galen* <sup>z</sup>  
 well remarks, in his commentary on this apho-  
 rism, *quod non omne sanguinis sputum sequentem habet  
 puris exspuitionem, sed tantum illud quod mali moris  
 est*, “ that spitting of pus does not follow on  
 “ every spitting of blood, but only on that which  
 “ is of a bad kind :” but as an inflammation usually  
 precedes an ulcer, which is caused by a rup-  
 ture of some of the vessels of the lungs, and as if  
 this inflammation be considerable it excites a fe-  
 ver. Hence *Galen* <sup>a</sup> deduces an unfavourable  
 prognostic, saying, *quotquot autem pblegmone sic occu-  
 pavit, ut jam febricitarent, horum nullus est omnino  
 persanatus*, “ but no patients as had such an in-  
 “ flammation that they grew feverish, were ever  
 “ cured ;” on the other hand, he gives hopes  
 of a cure <sup>b</sup>, *si nulla pblegmones suspicio circa vas rup-  
 tum*

<sup>y</sup> Sect. VII. Aphor. 15. Charter. Tom. IX. pag. 299.

<sup>z</sup> Ibid. <sup>a</sup> Method. Medend. Lib. V. Cap. xiv. Charter.

Tom. X. pag. 126. <sup>b</sup> Ibid. Cap. xv.

14 Of a PHTHISIS PULMONALIS. Sect. 1198.  
*tum superesset*, “ if there were no appearances of an  
“ inflammation about the ruptured vessel :” from  
whence, as will be said hereafter, in treating of the  
cure, we are to guard by all means against this dan-  
gerous inflammation.

It is also very evident, that worse consequences  
are to be apprehended from an hæmoptysis caused  
by an erosion, than from a simple rupture of  
the vessels ; for if the closing of a vessel broken  
by some violent cause be difficult, and an ulcer  
of the lungs often follows from thence, how  
much more is this to be feared, where the ero-  
sion of the vessels has caused not a wound, but an  
ulcer. According to the remark lately cited from  
*Aretæus*, such an ulcer cannot be healed till it be  
reduced to the condition of a simple wound, as was  
said before, §. 402. but for this end a greater and  
longer suppuration is required ; therefore more dan-  
ger attends an ulcer preying upon the lungs. But  
there remains still another and greater difficulty ; it  
was noted in the commentary on §. 387. where we  
treated of an inflammation terminating in suppura-  
tion, that it was necessary to the forming good pus,  
that the fluids passing through the vessels should be  
mild ; whereas in the present case the acrimony of  
the fluids is supposed to be so considerable as to  
have corroded the vessels, and when an hæmoptysis  
has been occasioned by such a cause, this acrimony  
still subsists ; which is not so easily removed as one  
might perhaps believe. Has it not been observed,  
that in scorbutic habits a very slight excoriation has  
degenerated into an ulcer, which has been very long  
before it could be healed, notwithstanding the phy-  
sician has tried all remedies, and although the sur-  
geon could easily come at it, and could keep it from  
the air ? From all these things we see the reason  
why *Galen* <sup>c</sup> almost despaired of curing a phthisis,  
which

<sup>c</sup> Method. Medend. Lib. V. Cap. XIII. Charter. Tom. X.  
pag. 126.



Sect. 1198. Of a PHTHISIS PULMONALIS. 15

which took its rise from such a cause: *Ex iis vero qui ulcus in pulmone habent, ii soli insanabiles mihi videntur qui ex succi vitiosi erosione id possident, quorum aliqui ut salsaginem sputum suum sentire se aiunt, nam longo arbitror tempore omnino opus esse, ut succi corrigatur vitium.* “ Of those (says he) who have  
 “ an ulcer in the lungs, they only seem to me to  
 “ be incurable, in whom this ulcer is caused by a  
 “ vicious corrosive humour; some of whom say,  
 “ that their saliva has a brackish taste, for I think a  
 “ long time is necessary to correct this acrimony of  
 “ the juices.”

But that hæmoptysis which proceeds from anastomosis, *i. e.* from the mouths of the vessels being dilated, is the most easily curable of any; because no acrimony of the humours is supposed here, and the vessels, although dilated, remain entire, and a constriction of the vessels follows from the very effusion of the blood; for the distension of the vessels depends principally upon two causes, *viz.* the force of the heart impelling the fluids, and the resistance of the narrow extremities of the vessels; but as soon these extremities being opened give a free passage to the blood, their resistance is considerably diminished; and hence, if by the body being at rest, the circulation of the blood is rendered very quiet, the vessels contract themselves by their own elasticity, their diameter is lessened, and their mouths close in such a manner as no longer to give passage to the blood, and thus the hæmoptysis ceases: the only danger seems to be, least the blood thus discharged by anastomosis, should lodge in the cellular substance of the lungs, and by becoming putrid there, produce an ulcer; but as it has been shewn, §. 830. 2. that the passage is easy from the pulmonary artery into the bronchia, or air-vessels of the lungs; hence, such an effusion of the blood into the cellular substance of this viscus is the less to be  
 7 feared,

feared, as the fluids propelled through the vessels tend most that way where they find the least resistance.

A phthisis being therefore a disease so difficult to cure, and at the same time so frequent, it will be of use to consider accurately those signs which shew that a person is inclined to this disease, and also to enumerate the chief causes, which, when the body is predisposed thereto, may produce an hæmoptysis and phthisis: for these being well understood, cautions may be given for the avoiding them; or, if that cannot entirely be done, at least for correcting them.

This disposition consists, 1st, in the thinness of the vessels, and the impetus of the blood rendered some way or other acrid: this cause is known by the visible slenderness of the vessels and of the whole body; when the neck is long, the chest flat and narrow, the shoulders deprest; when the blood appears very red, thin, dissolved, acrid and warm; when the complexion is very fair and beautifully rosey, the skin transparent, and the genius acute beyond a person's years.

The firmness of the vessels resists the fluids impelled into them: the greater therefore is the strength of the vessels, the less danger is there of a rupture of them; but the greater the impetus is of the blood flowing through the vessels, the greater force is put upon these vessels. If therefore an acrimony of the fluids exists together with an impetuous circulation and a weakness of the vessels, there is still greater reason to fear a rupture of these vessels: but these things are observed to concur in those persons who are inclinable to this disease. *Sydenham*<sup>d</sup> has observed, that

<sup>d</sup> Sect. VI. Cap. vii. pag. 361.



# Sect. 1198. Of a PHTHISIS PULMONALIS. 17

that persons of a warm constitution, but not so robust as others, were most liable to an hæmoptysis. The blood taken from the vein of such persons by bleeding, is of a very beautiful red colour, but the crassamentum is less firm, and the serum is saltier, thinner, and less high coloured than in common healthy blood; and as the colour of the blood is easily transparent through the thin coats of the vessels, hence comes the fair colour of the skin, where the cutaneous vessels are so small as not to admit the red blood, and the cheeks are of a beautiful rosey colour, by the ruddy colour of the blood being transparent through the thin coats of the vessels. Galen tells us<sup>e</sup>, *quod color a succis proveniat non a solidis animalis partibus*, “ that the colour of animals “ proceeds from the fluids, not from the solids.” How frequently have physicians lamented to see this cruel disease snatch away, in the flower of their age, beautiful young persons of both sexes, as a storm beats down roses in their bloom.

If at the same time the structure of the breast be such, that the chest is flat, and consequently its cavity narrow, the lungs will be less easily dilated, and the fluids will with more difficulty pass through the vessels of the lungs, and hence will exert a greater force upon the sides of these vessels; whence such a formation of the thorax has always been disliked by physicians: and as the arches of the ribs are less convex, hence they recede more from the scapulæ, which are therefore more prominent, and something resemble wings; whence also they are called by *Aretæus*,<sup>f</sup> *πτερυγώδεις*: this deformity is greatly increased, when in a complete phthisis all the fat is gone, and the plumpness of the muscles destroyed, for then the shoulders appear still more distant from the ribs: however, this prominence of

VOL. XII.

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<sup>e</sup> De Sanitat. tuenda. Lib. iv. Cap. 4. Charter. Tom. VI. pag. 121. <sup>f</sup> De caus. & sign. morb. diuturnor. Lib. I. Cap. viii. pag. 27.

the shoulders is sufficiently discernible in those who are inclinable to this disease, even before their health is impaired: such persons are very properly called by *Galen*, *φθινώδεις*, that is to say, obnoxious to a phthisis, although not yet actually attacked by it: and he principally seems to consider a straitness of the breast (*θωραξ στενὸς καὶ ἀεαθῆς*) as denoting a tendency to this disease, and a prominence of the shoulders, as a sign of this want of room in the breast. Such persons also have generally a long neck: whether has this length of the neck any efficacy towards producing an acuteness of the intellect? perhaps, in this case, the greater remoteness of the head from the heart, may so lessen the force of the blood ascending through the vertebral and carotid arteries, as to contribute to a more undisturbed and perfect exercise of all the functions of the brain; and as we observed in a note on §. 1010. 1. that a short neck rendered persons liable to an apoplexy, because the vessels of the brain were more violently distended with the blood, on account of the nearness of the heart; and frequently such men are observed to be dull and slothful; and daily observation shews, that youths of acute parts die of this disease. *Atticus*, who was so famous for his wit and eloquence, describing the make of his own body, says, *erat eo tempore in nobis summa gracilitas & infirmitas corporis, procerum & tenue collum: qui habitus & quæ figura, non procul abesse putatur a vitæ periculo, si accedit labor & laterum magna contentio*, “ my body was then very slender  
 “ and weak. I had a long slender neck, which  
 “ habit and form of body is esteemed very dangerous, if a man’s employment exposes him to  
 “ fatigue, and to a great agitation, and straining  
 “ of the chest and sides in speaking:” and he owns, that he spoke without any remission or variety of tone, with the utmost exertion of his voice, and a violent agitation of his whole body, so that his physicians



Sect. 1198. Of a PHTHISIS PULMONALIS. 19

sicians and his friends advised him to desist from pleading; but he chose rather to travel to *Asia*, to learn to change his manner of speaking; for he was willing to expose himself to any danger, rather than forego the hopes of acquiring fame by his eloquence: he succeeded in his design<sup>g</sup>, for returning two years after, *non modo exercitior sed & prope mutatus fuit. Nam & contentio nimia vocis reciderat & quasi deferbuerat. Oratio lateribusque vires & corporis medicem habitus acciperant*; “ he was not only more  
 “ exercised in speaking, but almost entirely altered;  
 “ the vehement tone of his voice was become moderate, and his oratory more calm; his sides had  
 “ acquired strength, and the habit of his body was  
 “ less inclining to extreme slenderness.” From this example it appears, that persons inclinable to a phthisis, may avoid this disease, if they take proper precautions.

Hence also appears, how very pernicious the custom is, of wrapping the breast and abdomen in children very tightly with swathes, &c. and of persons farther advanced, with stays; for the ribs being by these means deprest, the cavity of the thorax is straitened, and the abdomen being compressed at the same time, the descent of the diaphragm is rendered more difficult. Thus by a pernicious art, such a disposition is induced on the naturally healthy body, as where it appears spontaneously, is judged by physicians to be the forerunner of a fatal consumption. *Spigelius*<sup>h</sup> very justly inveighs against this custom, and ascribes the frequency of consumptions in *England* to this cause; and then adds, *ineptum est & ultra fidem perniciosum, illud studium, quod fere virgines adhibentur juncæ videantur, loris & mortifero artificio pectus in angustias cogentes ignoræ se angustando thoracem, januam tibi mercurique aperire.* “ That solicitude  
 “ which young women shew to make themselves

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“ appear

<sup>g</sup> Cicer. Brutus sive de claris orationibus, Cap. LI. Tom. I. pag. 412. <sup>h</sup> De human. corp. fabr. Lib. I. Cap. IX. pag. 19.

“ appear taper shape, is absurd, and incredibly pernicious; for, whilst by stays, and other hurtful contrivances, they straiten their chests, they do not consider that they are preparing the way for consumptions and decays.” On the other hand, he praises the custom of those countries, where (as he principally remarked at *Venice*) they endeavour to make the breast rather large than strait; and on that account, loosely wrap round the infant with a slight roller, instead of binding his body tight: nor do prudent physicians cease at this day from opposing this absurd custom, but (which is to be lamented) without success; for it would be easier to snatch *Hercules’s* club from his hands, than to prevail with foolish women to leave off any received custom, however hurtful it may be.

*Bennet*<sup>1</sup> considered also these appearances as prognostics of a phthisis. *Scapulæ acuminatæ, præcordia conticuta, pectus angustum & depressum, cervix gracilior & oblongas omnium pectoralium tenor flaccidissimus, caroque totius corporis musculoſa tenerrima.* “ Sharp  
“ prominent shoulders, narrow præcordia, a strait  
“ and flat breast, a slender long neck, a flaccidity of all the parts about the breast, and a  
“ tenderness of the muscular flesh of the whole  
“ body.”

In that weakness of the bowels, by which tenacious food becomes liable to produce obstructions, and to turn putrid and acrimonious, and to produce an ulcer in the vessels, corroded by these means, after an hæmoptysis: this is known by a slight fever, a dry cough, a preternatural heat, and a redness of the lips, face, and cheeks coming on, and increasing at the time when fresh chyle enters the blood; a promptness to sweat in sleep,

<sup>1</sup> *Fabid. Theatr. pag. 99.*



sleep, weakness and panting upon every considerable motion of the body.

It is evident from physiology, and has already been remarked in the chapter of the cachexy, and many other places, that many viscera are employed in changing the crude aliment into the nature of the human fluids; each of which viscera contribute their part to this function of the animal œconomy: when therefore the viscera, by means of their being weak, are unequal to their offices, the fluids, secreted from these viscera, will degenerate from their natural qualities; the chyle will be crude, viscid, or even acrid; for, unless the aliments can be subdued by the chylopoietic power of the viscera, they will follow their own nature, and degenerate into an acid, putrid, or rancid acrimony; or even into a tenacious visciduity, according to their different substances. Now the lungs are more liable to be affected by this fault in the fluids, and sooner than the other viscera; because a chyle thus vitiated, as soon as it is mixed with the blood in the subclavian vein, must immediately pass through the lungs, which therefore will receive the first bad effects of this degeneracy of the fluids. Hence *Bennet* \* observes, *qui bellariis & symposiis nimis indulserint, phthisi languorem importante maxime corripiuntur & periclitantur.* “ They who  
 “ indulge in luxurious eating, and in drinking to  
 “ excess, are often taken with a phthisis, bringing  
 “ on a languor, and very dangerous:” and this seems to be the cause why the consumption is so frequent among the *English*, who eat very strong food, and indulge themselves in drinking, and are less fond of vegetables than other nations: and inasmuch as the bile is of the greatest use in chylication, a greater depravation of the chyle is to be apprehended, if the liver, which is the organ that prepares the bile,

\* Theatr. tabid. p. 110.

be effected; on which account *Bennet*<sup>1</sup> says in his singular style, *magis periclitantur pulmones a pressura per denegatam epatis percolationem, quam a regurgitatione ab infarctis lienis vasculis.* “The lungs are more  
 “endangered by pressure, from the straining through  
 “the liver being hindered, than by an overflowing  
 “from the vessels of the spleen being stuffed up.”

The chyle, when not sufficiently assimilated by the action of the viscera, which perform the first concoction, may be faulty by too great viscosity, especially if the aliments abound with a viscid kind of glue; such are all unfermented farinaceous foods, strong broths or soups, especially those made from the extreme parts of animals: these viscid juices stuff up the narrow extremities of the pulmonary vessels, and thus create obstructions<sup>m</sup>; *a sanguine extravasato putrescente bronchia minus infarciuntur a succo nutritio magis, cum in mucaginosam excoquitur substantiam;*  
 “the bronchia are less stuffed up by extravasated  
 “blood, than by the nutritious juice, because this  
 “latter is concocted into a mucilaginous substance:”  
 but certainly these viscid fluids may, by time and the heat of the parts, acquire a great acrimony. Mild hartshorn jelly is pretty soon corrupted by the heat of summer, then indeed it loses its viscosity, and dissolves into a sharp putrid liquor. Dough soon acquires an acid acrimony. *Hippocrates*<sup>n</sup> feared a dangerous erosion from soft phlegm accumulated in the lungs: he speaks thus, *Pituita enim pulmones implentur & fit pus, illud pulmones exedit neque ægroti facile evadunt.* “The lungs are filled with phlegm,  
 “and pus is formed, which corrodes the lungs, nor  
 “do the sick easily escape.” If this chyle is not viscid enough to stop in the lungs, but is already become acrid, or being very near degenerating into an acrimonious fluid, circulates in this state along with the blood through all the parts of the body, it may

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<sup>1</sup> Ibidem. p. 107.    <sup>m</sup> Ibidem. pag. 109.    <sup>n</sup> De glandulis, Cap. v. Charter. Tom. IV. pag. 274.



# Sect. 1198. Of a PHTHISIS PULMONALIS. 23

so change the whole mass of the blood, as to render it acrid, and deprave its natural quality ; as was said in the chapter of the cachexy. But in order for giving a supply of what is wanted, whether in the solids or fluids, a mild disposition of the juices is requisite ; where this therefore is altered, nutrition will be imperfect, and the strength of the body will gradually decrease. *Bennet* °, who very attentively observed every thing relative to this disease, says, *odor corporis, maxime inter sudandum, a consuetudo demutatus, cutisque præsertim facili deflorescentia quoad colorem, habitus corporis mutatus, vigor languescens, hujus adulterationis jamjam factæ in morbis plerisque diuturnioribus, præcipue phthisi indicia sunt.* “ The smell of  
 “ the body being much altered from that which is  
 “ customary, especially in sweating, the colour of the  
 “ skin, (particularly the complexion of the face) be-  
 “ ing faded, the habit of the body being altered, and  
 “ its vigour being infeebled, are to be accounted  
 “ signs of this depravation of the humours being ef-  
 “ fected in chronical diseases, particularly in a con-  
 “ sumption.” All these appearances are signs that such fluids are not re-supplied by nutrition, as are daily wasted from the body by the vital actions in a state of health : and whereas some parts of the solids are also perpetually wearing away, the solids will likewise decay, unless there be a supply of what is lost from them : and as the blood-vessels of the lungs are considerably thin towards their extremities, and have to sustain the whole force of the right ventricle of the heart, urging the blood upon them ; it is easy to conceive, why the lungs are most readily affected by such a cause : this seems to be the reason why *Hippocrates* prognosticates a consumption, when there appears signs of a great acrimony in the humours<sup>p</sup> ; *eruptiones quasi abrasæ cute (ἀπὸ χυμῶν) habitus tabem significant ;* “ eruptions appearing like excoriations,  
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° *Theatr. tabid. pag. 23.*  
*Tom. VIII. pag. 844.*

<sup>p</sup> *Coac. Prænot. N° 444 Char-*

24 Of a PHTHISIS PULMONALIS. Sect. II 198.

“ by tearing or scratching, import a consumption  
 “ of the habit of the body ;” for these eruptions are  
 a sign that such particles are propelled to the extre-  
 mities of the cutaneous vessels, as are capable of  
 corroding the skin by their acrimony ; but as the sur-  
 face of the air-vessels of the lungs perspires much  
 more than the external skin, there is a danger least  
 these also should be affected in like manner : it is  
 true indeed, that the neighbouring heart acts with  
 such force upon the extremities of the exhaling ves-  
 sels of the lungs, that it is not easy for any thing to  
 stay there long enough to corrode them ; but if a  
 visciduity of the blood should be combined with this  
 acrimony, or if the perspiration of the lungs should  
 by any cause be diminished, such an effect might  
 follow : accordingly, *Bennet*<sup>a</sup> remarks, *quod in ni-*  
*vium & grandinum congelatione, cæloque pluvioso hæmop-*  
*toici magis tentantur*, “ that persons subject to an  
 “ hæmoptysis, are chiefly affected with snow, hail,  
 “ or rainy weather :” and it is notorious, that these  
 kinds of weather are least favourable to a free per-  
 spiration ; for the same reason, such erosions, or even  
 pimples, are formed on the skin in consumptive per-  
 sons, when acrid particles, which should be thrown  
 off by perspiration, begin to stop in the pores.  
*Bennet*<sup>r</sup> confirms the observation of *Hippocrates*, by  
 the following remarks ; *quibus uredo, impetigo, aut*  
*prutis autumnalis hyemalis cutes orpessent quod ple-*  
*rumque fit sudoribus frequentioribus uti convenit, illisque*  
*semper proficere* ; “ they who are subject to heats, or  
 “ a scurf and itching on the skin, in autumn and  
 “ winter, as if often the case, should frequently pro-  
 “ voke sweats, as these are always found of use to  
 “ them ;” for he expected much good, if that acri-  
 mony which was generated in the humours could be  
 expelled by the pores of the skin, as will be men-  
 tioned hereafter in treating of the cure. The signs  
 which shew that there is such a disposition in the bo-  
 dy

<sup>a</sup> Theatr. tabid. pag. 109.

<sup>r</sup> Ibidem. pag. 123.



dy, and that the lungs begin to be affected by it are here enumerated; a slight fever comes on, either from an acrimony already generated in the humours, or because the viscera are too weak, properly to assimilate the aliment; for that a fever may arise from this cause, was proved in §. 586. when we treated of the causes of fevers; and the lungs being irritated, by the acrid chyle flowing through them, together with the blood, a cough follows, which is a dry cough, because there is yet no matter to be expectorated; and as at the time when fresh chyle is poured into the blood, the passage of the blood through the lungs is somewhat more difficult, even in healthy persons; hence arises a greater heat, and a fulness of the blood-vessels of the head, because the jugular veins are more difficulty emptied; this will be very evident to any one who compares the appearance of guests invited to a feast, on their first sitting down, and with their looks after the feast is over, when all their countenances are red and turgid; nor is this to be wondered at, as the distended stomach prevents the free descent of the diaphragm, and thereby diminishes the expansion of the lungs, and at the same time crude chyle, in large quantities, is circulating along with the blood: such persons who are obliged by their office to speak in public, sufficiently experience how much easier it is to perform this function before than after dinner.

But if all these inconveniencies are increased beyond what is customary at the time when fresh chyle is poured in plenty into the blood, that is to say, some time after meals, the diagnosis will be more certain; for that slight fever, which physicians (as was said §. 835.) call hectic, that is, habitual, keeps one even tenor, without intension or remission; whence it happens, that the patient does not perceive he is ill; but in the progress of the disease, a manifest increase of this fever is perceived towards evening: but *Galen* well observes, that this exacerbation depends



depends not on the nature of the hectic, which always keeps the same equal course, but is caused by the food taken in, which being once digested and distributed through the mass of blood, this fever returns to its former state; besides, we remarked §. 834. that even in health, mens pulse often grew quicker towards evening; whence we see another reason, why a hectic grows worse at this time of day: why the sweat should so readily break forth in sleep, when men are inclinable to this disease, or are already attacked by it, was explained §. 837. in treating of nocturnal sweats in an abscess of the lungs. But as the aliments we take in do not nourish, unless they are first converted by digestion to good chyle; and as the wasted fluids and solids are not replaced by the chyle till it is farther assimilated by the action of the viscera, and of the vessels; and as the action of the lungs contributes greatly to produce this effect, the reason why weakness accompanies this disorder is evident.

Violent panting on the least motion, is a consequence partly of weakness, and partly of the passage of the blood through the lungs being impeded; whence we see the reason why consumptive persons do not feel this symptom so much in the beginning of the disorder, unless a vitious formation of the breast hinder the free expansion of the lungs; but when, in the progress of the disorder, an ulcer is once formed in the lungs, then this ulcer pressing upon those vessels which are yet unobstructed, renders the passage of blood from the right to the left ventricle of the heart difficult. But when there is an ulcer indeed, but an open one, then matter is continually spit out, and the patient is less troubled with pantings; but the body is gradually wasted, and the strength fails, unless that ulcer can be healed; which, as we shall see, it is very difficult to do.

That age in which the vessels having attained their full growth, resist any farther longitudinal distension, while in the mean time, the quantity, acrimony, and impetus of the blood, are augmented; this age is between 16 and 36 years.

We know that the body grows faster, the nearer it is to its first origin. The embryo, from the minutest point, increases in the uterus in 9 months to the so vastly greater size of the foetus; the infant still grows in bulk after the birth, but in such a manner, that the quickness of the growth decreases as life advances, and entirely ceases in adults; in whom the solid parts are now become so firm, that they can no more be stretched in length by the motion of the fluids, which are propelled through the converging vessels by the force of the heart; for all appearances seem to teach us, that the increase of stature depends on the elongation of the vessels, by the fluids impelled through them; so that during those stages of life in which the vessels are most flexible, and the action of the heart more quick, and at the same time tolerably strong, the growth is very rapid. In young persons, the pulses of the heart are more frequent, and all the vessels are tender, and easily yield; this is farther confirmed, by observing, that when the momentum of the blood upon the vessels is increased, as it is in acute disorders; when persons are young, a great and sudden increase of stature is perceived after recovery from the disorders, so as that young persons often grow more in one fortnight in these circumstances, than they had done for a whole year before. Daily observation shews this; nay, I have sometimes seen young persons who had almost done growing, on being seized with the small-pox, to have become much taller presently after recovering from this disease.

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When a man therefore approaches that age, at which the vessels will not suffer themselves to be stretched any farther in length by the action of the impelled fluids, their sides are more distended, the blood urges with greater force on the narrow extremities of the vessels; and then it is, that so frequently there happen those bleedings at the nose, to which young persons are so liable, either because the extremities of the vessels are dilated by anastomosis, or from a rupture of some vessels, if the impetus of the blood be suddenly augmented, or there be a plethora. Besides, there seems to be also about this time a greater acrimony in the humours; for all the juices are mild in new-born infants and children, who are best pleased with the mildest food; their urine has scarce any smell or taste, and is of a wheyish colour. About the time of puberty the urine grows yellower and more acrid, a foetid sweat is observed about the arm-pits and the groin, and the passions of the mind are so altered, that the whining child is now become a hardy and adventurous youth; he finds in himself an unusual vigour, together with great agility of his limbs, and hence is fond of every occasion of trying his strength: if just at this season, young persons indulge in high feeding, wine, and lust, and use violent exercise, it is very evident how great a danger there is, lest the fluids increased in quantity, become more acrid, and circulating with greater impetuosity, should burst the vessels, those of the lungs especially, where the blood is impelled by the whole force of the right ventricle of the heart, from the large trunk of the pulmonary artery, into very small and tender arteries. It is true indeed, that about this time of life, a salutary hæmorrhage from the nostrils frequently happen, and diminishes this danger. *Hippocrates*<sup>s</sup>, when he is enumerating the diseases which are most common to the different ages of life, tells us, that an hæmorrhage

<sup>s</sup> Aphor. 27. Charter. Tom. IX. pag. 122.



hæmorrhage of the nose often happens to persons advancing to puberty: *Galen*<sup>t</sup>, in his commentary on this passage, ascribes this to a redundancy of the blood: he says thus, *non quod copiosior quam ante generetur sed quod minus quam prius absumatur, propterea quod & augmentum, pro corporis ratione, hâc ætate minus, quam superiore procedat*; “that it is now generated in greater quantities, but that less of it is consumed than before, because that the growth also, in proportion to the size of the body, is slower at this age than in the preceding ones.” In the meanwhile, lest we should too much confide in the salutary hæmorrhage from the nose, he adds<sup>u</sup>, that an hæmoptysis and consumption often come upon young persons.

*Sydenham*<sup>w</sup> also has remarked, that a bleeding at the nose often attacked those whose blood was over-hot, and who were of a weak constitution. *Hæmoptoe etiam quæ in æstatis ac veris confinio homines calidioris temperamenti ac minus robusti adoritur, & quorum pulmones minus recte valent præ senibus item juniores, ejusdem fere indolis quam hæmorrhagia jam tractata mihi est, &c.* “That hæmoptysis, which on the borders of spring and summer attacks men of warm but weak constitutions, and those whose lungs are somewhat infirm, and which more frequently happen to the young than to the old, is nearly of the same kind with the hæmorrhage already treated of by me;” and he advises nearly the same method of cure.

*Bennet*<sup>x</sup>, who was so accurate an observer of every thing that relates to this disease, acknowledges also the usefulness of an hæmorrhage from the nose, for preventing a pthisis, or at least for prolonging life; his words are, *phtisici omnes frequentiori modo mediocri narium hæmorrhagiâ detenti duiturniores. Si suffusio sanguinis*

<sup>t</sup> Aphor. 27. Sect. III. Charter. Tom. IX. pag. 122. <sup>u</sup> Aphor. 29. Ibidem. pag. 125. <sup>w</sup> Sect. VI. Cap. vii. pag. 360, 361. <sup>x</sup> Theatr. Tabid. pag. 11.

*sanguinis cum pari per nares expressione, arteriam pulmonariam simul occuparent, minus periculosum quam simplex in arteriam extrusio.* “ All consumptive persons who  
 “ have frequent moderate bleedings at the nose, hold  
 “ out the longer for this discharge; and if this hæ-  
 “ morrhage accompany a discharge of blood from  
 “ the pulmonary artery, the danger is less than  
 “ when the discharge is from the pulmonary artery  
 “ alone.” And this same author, in another place<sup>y</sup>, which was quoted in the commentary on the 741st aphorism, has observed, that a moderate periodical bleeding at the nose keeps off a consumption, and is much more serviceable than repeated phlebotomy: and he confirms the usefulness of such an hæmorrhage, by the example of a youth who had received a consumptive habit from his parents, and who nevertheless, enjoyed almost uninterrupted health from 16 to 25 years old, by means of a bleeding at the nose; for towards the end of the spring, and almost through the whole summer, once or twice a day he bled from the nose an ounce, or sometimes two ounces of blood; at 25 this hæmorrhage stopt on his taking cold in his head; soon after his breast began to be overcharged, an hæmoptysis, and other symptoms of a beginning phthisis followed. The lancet was used, but with little success; but a copious hæmorrhage returning, the breast grew freer, and he escaped so great a danger without any considerable alteration in his health.

If therefore a person was freed by this means from an hereditary consumption, which all physicians acknowledge to be the most difficult of cure, what may not be hoped in other cases from the same salutary discharge? and this should also be a caution to physicians, least overcome by the importunity of the patient or his friends, they should imprudently stop this hæmorrhage by any remedies.

But



## Sect. 1198. Of a PHTHISIS PULMONALIS. 31

But although every stage of life be liable to an hæmoptysis, yet it is certain this symptom occurs most frequently in the time of life between early youth, or adolescence and manhood. *Galen*<sup>z</sup> computes this time to last from 18 to 25, and from that time to 35 he calls persons youths; and he thought *Hippocrates*<sup>a</sup> used the plural word *ætatibus*, ages, because in that interval between 18 and 35, both adolescence and youth were comprehended. *Aretæus*<sup>b</sup> says simply, *juvenes autem usque ad consistentem ætatem* (μεχέῃ ἀμπῆς) *post sanguinis sputum pthifici fiunt*; “youths “till the time of full growth, after an hæmoptysis “become phthifical;” but *Hippocrates*, as has been said before, limited the space of time in which there is the greatest danger of an hæmoptysis to a certain number of years. However there is a danger of this even before the age of 18, as we see both this and the hæmorrhage from the nose to happen at the beginning of puberty, which in most people is before the age of 18. This *Hippocrates*<sup>c</sup> notes in another place, saying, *cum venere uti incipiunt aut kircire sanguinis profluvio laborant*; “when they begin to use “venery, and the beard begins to appear, they are “seized with an hæmorrhage in the nose:” therefore, in whom, on account of an hereditary taint, or a vitious formation of the breast, or of any of the signs enumerated in the first number of this paragraph, a phthisis is to be feared, we ought not to wait for the age of 18, but every precaution is to be taken before this, to prevent an hæmoptysis and the phthisis consequent thereupon; after 35, there is less reason to apprehend this disorder, as all the vessels are by that time become strong, and at the same time the impetuosity of youth has subsided; and hence

<sup>z</sup> Comment. in Sect. V. Aphor. Charter. Tom. IX. pag. 200.

<sup>a</sup> Aphor. 9. Sect. 5 ibid. 199. & Coac. Prænot. N° 439. Charter. Tom. VIII. pag. 878.

<sup>b</sup> De caus. & sign. morb. diuturn.

Lib. I. Cap. viii. pag. 36.

<sup>c</sup> Lib. VI. Epidem. Text. 25.

Charter. Tom. IX. pag. 457.

hence all the passions are become more calm : in the state of manhood, greater prudence, and the various cares of business hinder most people from indulging in excessive pleasure ; the frame of body at this age is in the medium, between the flexible softness of the new born body, and the dryness and callosity of old age ; that is to say, the vessels have attained their due firmness.

In an hereditary disposition, consult here what was said §. 24, 26, 29, 38, 39, 40, 41, 44, 48, 60, 61, 64, 69, 72, 82, 84, 86, 100, 106 ; for these being compared with what has just been said, explain, define, and presage the nature, the cause, and the consequences of an hæmoptysis.

That the diseases are propagated from parents to their children is confirmed by numberless instances, concerning which I have treated in another place ; (§. 1075.) this is equally confirmed with regard to the phthisis in particular ; and the ancients seem to have thought those persons in great danger of this disorder, whose parents were destroyed by it ; for we read in *Plutarch* <sup>a</sup> as follows, *veritatem enim E<sup>3</sup> de quo constet ne in his quidem quæ nos agimus certo possumus habere. Verbi gratiâ cur tabe aut intercute aquâ extinctorum liberos tantisper dum cadaver comburitur sedere jubemus pedibus in aquam demissis ? creditur enim sic effici ut morbus in eos non transeat neque eos attingat.*

“ For we are not able to attain to truth and certainty,  
 “ even in those things which are the object of our  
 “ own actions ; for instance, why we order the chil-  
 “ dren of those who die of a phthisis, or a dropsy,  
 “ to sit with their feet in water while their parent’s  
 “ body is burning ; for it is thought that by this  
 “ means

<sup>a</sup> Comment. de his qui fero a numine puniuntur. Tom. II. pag. 558.



“ means the disease is hindered from passing to  
 “ them.” Certainly *Bennet*<sup>e</sup> does not hesitate to  
 call the impression of this disease received from the  
 parents indelible; not indeed that the phthisis is ab-  
 solutely unavoidable by those whose parents have  
 died of this disorder, but because there always exists  
 in them a pre-disposing cause, which may bring forth  
 the disease, when any circumstances shall give an occa-  
 sion to it; and the disease so produced will be very  
 hard to cure: hence, in these cases, the greatest pre-  
 caution and watchfulness are necessary, as will be  
 shewn hereafter, §. 1207. least an hæmoptysis should  
 come on about the age of puberty, which a phthisis  
 will certainly follow, where there is an hereditary  
 taint of this disease.

It has been already observed, §. 24. that sometimes  
 the solid fibres of the body cohere so weakly, as to be  
 broken by that motion which is the mere effect of  
 health, or however, by the least excess of this motion:  
 hence, §. 26. it appeared that a rupture of the vessels  
 was much to be feared, which is confirmed by the re-  
 marks on the 25th aphorism; but it was proved §. 38,  
 39, 40, 41. that the same fault might exist in the ves-  
 sels and viscera; and §. 44. the effects of this fault are  
 enumerated, among which is reckoned an easy solution  
 of the vessels, by internal or external causes, acting  
 by acrimony or motion; and among the conse-  
 quences, a phthisis was also reckoned, which was  
 farther confirmed by the remarks on §. 45. and 48.

If at the same time it be considered, that an acri-  
 mony may be produced in our fluids, and that of  
 various kinds, we may conceive another cause of an  
 hæmoptysis; (§. 60, 61, 64.) we treated of an acid  
 acrimony; (§. 82, 84, 86.) we spoke of the putrid  
 alkaline acrimony, and its most pernicious effects.

But the fluids by degenerating into an inert viscosity,  
 of which we treated §. 69. and 72. may likewise  
 impair health; for although a cacochymia of this

kind should be unaccompanied with any acrimony, yet by obstructing and distending the vessels of the lungs, it may give rise to this disease, especially if there be a weakness of the solids at the same time, as often happens; of which mention was made above.

But even although all the humours should be healthy, and neither acrid nor viscid, it was demonstrated §. 100. that by their motion only through the vessels being increased, stoppages and destructions of the vessels might be caused, together with a very noxious degeneracy of the humours; so that an hæmoptysis and a phthisis might be produced by this cause, if the vessels of the lungs were hurt by it: this has been observed in acute inflammatory disorders, and in the small-pox.

Finally, although there should be no fault either in the solids or fluids, and the motion of fluids through the vessels should not be excessive, yet from the too great quantity only, even of healthful blood, which excess the physicians call a plethora, the vessels may be so over distended as to break, and thus an hæmoptysis may be occasioned; this was observed on the comment on §. 106.

All therefore that is said in the aphorisms quoted here in the text, deserves to be compared with the contents of this present paragraph; for by this means we shall better comprehend the causes of this disease, and be able with greater clearness to determine what is to be hoped or feared in it: if for instance, in a plethoric subject, an hæmoptysis comes on, either from an anastomosis, or a rupture of the vessels, we may hope to cure it, as it is easy to remove this over-fulness of the vessels by bleeding; on the contrary, when the symptoms shew the structure of the vessels to be weak, and the humours to be acrid, then certainly there is great danger of a consumption, and of the disease proving fatal, if an hæmoptysis comes on, because these causes can neither so soon,

nor



Sect. 1198. Of a PHTHISIS PULMONALIS. 35  
nor so easily be remedied as the former, and an erosion of the vessels very frequently ends in an ulcer.

The effect of these dispositions, viz. an hæmoptysis, is accelerated, first, by the interruption of any customary evacuation, especially those of the sanguineous kind, such as bleeding piles, the menses, or lochia, an hæmorrhage of the nose, bleeding with the lancet customarily used, especially in plethoric habits, or where persons have lost a limb.

There are three principal ways, by which in time of health those things are expelled from the body, which would be pernicious if they remained there; these are stools, urine, and perspiration: when these excretions are impeded, it is certain that diseases, and those sometimes very dangerous, often follow, but the lungs do not seem in these cases to be more exposed to injury than the rest of the body; but there are other excretions observed by the physicians, by which noxious superfluities are discharged from the body, and which if they are suppressed, very great evils follow; and often by these acrid particles being retained, the vessels of the lungs are corroded, and an incurable consumption is brought on. From the skin of the head in infants there often oozes forth an acrid serum, which drying into a crust, is very fœtid, as was remarked on another occasion, §. 586. Sometimes a like disorder prevails all over the skin; if this be either by accident or design suppressed, terrible disorders and convulsions are the consequence; nay, the lungs are frequently affected, and a phthisis brought on by this suppression. I have sometimes seen a periodical asthma, which lasted many years, occasioned by this excretion being stopped, the fits of this asthma went off each time by a like cutaneous eruption on the face; about the time of puberty,

the intervals of the fits grew considerably longer, and the person lived afterwards free from this complaint: whence we learn, that the morbid matter is not in these cases discharged by the usual channels, but seeks an issue by peculiar passages, which cannot be pre-determined by the rules of art, but can only be known by a careful observation of what happens to patients.

On this account experienced practitioners are not studious to stop such excretions, although they are often troublesome, or to drive them into other channels but very cautiously and slowly; for they have learnt by the misfortunes of themselves or others, that they proceed with great caution here. Hence Dr. Mead<sup>f</sup> very wisely gives the following advice, *habent enim humores vitiosi suam quique indolem, cumque per modum crisis plerumque prorumpant quantumvis minui possint; vix tamen cum bonis ægri rebus per alios meatus, quam quos natura monstrat e corpore prorsus exeunt;* “vicious humours have each their peculiar  
 “quality, and as their eruptions are generally by  
 “way of crisis, though they may be lessened, they  
 “can scarce be discharged with safety by other passages than those which nature directs.”

There are many instances in medical history, which shew that a phthisis arising from the acrimony of the blood, has been cured by such excretions. Bennet<sup>g</sup> relates, that he had seen many who had a muriatic acrimony in the blood, yet remained free from the erosion of the lungs, because the acrimony fell upon other parts; and as one instance, he mentions the following: *inter eos Londinensem mercatorem in sceleton propemodum mutatum, cui liquor salinus tanquam a pulmone refluus, tam efferus, ut chirones volis manuum turpissimos, ulceraque exedentia pedibus & talis inusserit salvâ adhuc pulmonum nativâ integritate;*  
 “a merchant of London, who was wasted almost to  
 “a

<sup>f</sup> Monita & Præcept. Medic. pag. 32.  
 pag. 64.

<sup>g</sup> Theatr. tabid.



“ skeleton, in whom this acrid saline humour,  
 “ which had at first fallen on the lungs, at last made  
 “ itself a passage to other parts, caused the most  
 “ loathsome ulcers in the palms of the hands, and  
 “ corrosive ulcers in the feet and heels, the lungs  
 “ still remaining uninjured.” But elsewhere <sup>h</sup> he  
 says, this is a certain diagnostic; *si aliquâ de causâ*  
*per secessum in articulos, aut in corporis circumferentiam*  
*eveniat diffusio fluxus salsuginosi, & exinde pectus ad tem-*  
*pus robur acquirat*; “ if from some cause by a revul-  
 “ sion, the salt humour be diffused upon the limbs,  
 “ or the surface of the body, and from thence the  
 “ breast gains strength;” and in another place <sup>i</sup> he  
 remarks, *quod infanti pulmonari crebro & difficulter*  
*anbelanti, tuberculum nucis juglandis magnitudinem ade-*  
*quans tibiæ mediæ insedeant, & sanitatem attulerit per tres*  
*menses; cum tamen tunc temporis rediret, malum asthmate*  
*& diarrhœâ deprehensus expiravit*; “ that in an in-  
 “ fant whose lungs were touched, and who la-  
 “ boured under an asthma, a tumour of the size of  
 “ a walnut arose on the middle of the leg, and this  
 “ restored him to health for three months; but the  
 “ disorder returning, he was taken with an asthma  
 “ and diarrhœa and died.”

Many years ago, a learned and experienced physi-  
 cian wrote to me, that while the patient under his care,  
 who had a cough with a fever and a decay, lived on a  
 milk diet, in the eleventh month of this regimen, a  
 fleshy excrescence arose in the first and second joint of  
 the thumb of the right-hand, from whence oozed a  
 sharp humour, which, when dry, resembled chalk; and  
 while that humour continued flowing, his strength  
 returned; the patient then left off the milk diet, this  
 fungous flesh continued to discharge this humour for  
 the space of two months, and the patient was per-  
 fectly recovered. I wondered afterwards to find in  
*Solanus de Luque* <sup>k</sup>, observations which confirm this;

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as

<sup>h</sup> Ibidem. pag. 101.  
 morb. &c. pag. 168, 178.

<sup>i</sup> Pag. 13.

<sup>k</sup> Origen.

as I had admired his remarks on the pulse, as a critical sign foretelling a hæmorrhage of the nose, a diarrhœa, &c. I had a vehement desire to see this physician's learned treatises, and at last got what I desired from *Spain*; and found in him, that in a very dangerous consumption, he made an issue between the fore-finger and the thumb, and with great success.

I should suppose, that he herein imitated that which he had observed to be serviceable when it was effected by the force of nature, and therefore chose this place for making the revulsion; however, such drains made by art in other places, by which the sharp morbid matter may find a passage, are of service: we read in *Cælius Aurelianus*<sup>1</sup>, that *Themison* used to order external ulcers to be made, and to be long kept open, with this intention, that a revulsion of the humour may be made to the external parts, and thus the internal ulcers be healed. *Cælius Aurelianus* indeed disapproves this method; but at least it appears from hence, that the ancients recommended such a method in a consumption. *Hildanus*<sup>m</sup> says, he can prove by many instances, the usefulness of a seton in the nape of the neck for the cure of this disease, and shews its wonderful effects by the following case: “ A lady of quality, was troubled for  
 “ many years with a defluxion on her breast, and  
 “ had used various remedies to little purpose;  
 “ at last she not only spit up blood, but great quantities of purulent matter, and fell into an hectic,  
 “ with a wasting of the body, and loss of strength;  
 “ he used proper remedies, but applying a seton to  
 “ the neck, the patient soon recovered, and afterwards bore several children; whereas she had not  
 “ been pregnant for many years before.”

These instances sufficiently prove, that an hæmoptysis and phthisis may be produced by a retention of any customary discharges; and at the same time it appears,

<sup>1</sup> Morb. Chronic. Lib. II. Cap. xiv. pag. 423.  
 serv. Chirurg. centur. 3. Observ. 38. pag. 220.

<sup>m</sup> Ob-



# Sect. 1198. Of a PHTHISIS PULMONALIS. 39

appears, that nature often finds a way by which she expels these acrid fluids from the body, and that art frequently imitates these efforts of nature successfully.

But although, as will presently be mentioned, an hæmoptysis often be occasioned from the suppression of sanguineous discharges, yet it also is frequently observed in those whose blood is acrid and thin (as was said above), in whom there seems rather to prevail an acrimony of the humours, than an abundance of good blood; and hence, an hæmoptysis, caused by an erosion of the vessels, is to be apprehended, which is always the most dangerous. *Hoffman* <sup>n</sup> very well remarks, that they are mistaken, who suppose an abundance of wholesome blood, of a good consistence, to be the proximate and material cause of hæmorrhages; for in such constitutions, the vessels are strong and the juices mild: he feared hæmorrhages more in those whose blood the serum is in much greater quantity than the crassamentum; for this is the case in bodies of a softer texture, and this shews also that the blood is thin and acrid.

It is however certain, that sanguineous discharges being suppressed, frequently give rise to this complaint; and that the best remedy is, either to restore these evacuations, or to excite other discharges in places less dangerous than the lungs.

The hæmorrhoidal flux.] Frequent instances of this are to be found in good writers, which would be too long to enumerate. I have seen this disorder arising from such a cause in a man of a fifty, in other respects healthy, who had a copious hæmorrhoidal discharge twice or thrice a year; this discharge was imprudently checked, he began to perceive a wonderful fluttering in his pulse, and soon after a tension in the left flank, which ascended towards the breast, and an hæmoptysis presently followed: although various

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means

<sup>n</sup> Medic. ration. & system. Tom. IV. part. 2. pag. 5.

means were tried, the former periodical discharge could never be restored; but the hæmoptysis returned frequently with the same symptoms, and at last he died consumptive, his whole body swelling before his death. *Hippocrates*<sup>o</sup> of old forewarned us, *diuturnas hæmorrhoidas curanti nisi una servetur, periculum est hydropem succedere vel phthisin*; “in the  
 “cure of bleeding piles, of long standing, unless  
 “one be left running, there is a danger of a dropy  
 “or a phthisis;” both appear to have taken place in this unfortunate man.

On the other hand, blood being drawn from the hæmorrhoids by leeches, was of great service to *Duretus*<sup>p</sup>, who, when past fifty, on a hæmorrhage from the nose, to which he was subject, being suppressed, was troubled with a frequent and copious spitting of blood, but recovered so by this means, as to have no remains of the disorder; for he says of himself, *quod eum qui sequutus est annum exegerit medendo, scribendo & legendo Hippocratem clarâ voce & firmis lateribus*; “that he passed the next year in practising,  
 “physic, and writing, and in reading *Hippocrates*,  
 “with a clear voice, and no disorder in his chest.”

The menses or lochia.] Hereafter, when we treat of the diseases of virgins, it will appear that the menstrual blood being obstructed in its natural discharge, finds out most wonderful passages in various parts of the body; it is true indeed, that it often does this by anastomosis, without a rupture of the vessels, and that the evacuation ceasing, the part from whence the blood discharged itself, appears to have suffered no alteration; whence not much danger is to be apprehended, if the discharge is made through a part not necessary to life. On which account, *Hippocrates*<sup>q</sup> says, *mulieri menstruis deficientibus sanguis ex naribus fluens bonum*; “an hæmorrhage from the nose  
 “coming on in a suppression of the menses is good;  
 “but

<sup>o</sup> Sect. VI. Aphor. 12. Charter. Tom. IX. pag. 254. <sup>p</sup> Lud. Duret. in Coac. Hippocrat. pag. 289. <sup>q</sup> Sect. V. Aphor. 33. Charter. Tom. IX. pag. 214.



“ but when the course of the menstrual blood is diverted on the lungs, there is more danger to be feared;” although physicians have observed, that an hæmoptysis from this cause has sometimes subsisted a great while, without a phthisis following it. Thus we read in *Hoffman*<sup>r</sup>, of a lady of quality, who had a great fright at the time of her menses, which were immediately suppressed; on which there followed an oppression of the breast, anxiety of the precordia, and a violent palpitation of the heart; the next month the menses appeared in a very small quantity, but an hæmoptysis, preceded by the above symptoms, came on, which ceased after four days: this hæmoptysis returned every month, for nine years successively, but so as to intermit in the time of pregnancy, returning after delivery, and preserving its usual periods while she suckled her children, her health all the time was not affected by it. *Bennet*<sup>s</sup> confirms this also by his observations, shewing that nature becomes used to this revulsion, and bears it with less injury; the success is not however always so fortunate, as that the menstrual blood should pass through the dilated vessels of the lungs without harm; it may stop there, obstruct the vessels, raise an inflammation, and produce an ulcer of the lungs: this *Hippocrates*<sup>t</sup> observes in some women, saying, *quibusdam mulieribus quum bimestres menses copiosi in utero extiterint, ubi intercepti fuerint ad pulmonem feruntur; his omnia contingunt quæ in tabe dicta sunt neque superesse possunt.* “ When the menstrual blood has been in large quantities in the womb for two months, and the discharges thereof have been suppressed, the blood is thrown upon the lungs, and all the symptoms of a phthisis are produced, nor can such patients recover.” A danger of this kind seems principally to be apprehended, about that age at which the menses naturally

<sup>r</sup> Med. rat. & system. Tom. IV. part. 2. p. 46. Vide & Aretæum de caus. & sign. Morb. acut. Lib. II. Cap. 11. pag. 13.  
<sup>s</sup> Tabid. Theatr. pag. 13. <sup>t</sup> De morb. mulier. Lib. I. Cap. 17. Charter. Tom. VII. pag. 731.

rally make their first appearance, as *Bennet* <sup>u</sup> observes in the following remark; *si virginibus maturioribus quibus sanguis menstruus non fluxerit contigerit phthisis ejusque in pectoralia sit ἀναδρὸμὴ degeneratio pessima, depreculatio repentina eventus funestus.* “ If a phthisis  
 “ comes on in virgins at ripe years, who have not  
 “ yet had the menses, and a reflux of the blood on the  
 “ breast happens, this produces a very great deprava-  
 “ tion of the humours, sudden emaciation, and  
 “ death in the event.”

There is still more danger from a suppression of the lochia, as the blood stagnating in the vessels and sinusses of the uterus, and by the admission of air, readily tending to putridity, may produce the most pernicious effects in every part of the body, to which its course may be directed, as will be noted at large hereafter, §. 1329. when we come to treat of this subject. *Hippocrates* <sup>w</sup> tells us, that coughs, asthmas, obstructions, and suppurations of the lungs, &c. may be feared from a suppression of the lochia.

It has been shewn already, of how great service an hæmorrhage from the nose is to those persons who are in danger of an hæmoptysis: that customary bleeding should not be left off all at once, was observed §. 106. where all these things are discussed, as also the plethora; too great a fulness of the vessels is always to be guarded against, when an hæmoptysis is at all apprehended.

The danger of a plethora, and of an hæmoptysis consequent upon it, in persons who have lost a limb, was shewn in the observations on §. 474.

Any great violence done to the lungs by coughing, shouting, singing, running, or making any great effort, also by anger, or by any wound inflicted by any cause.

That

<sup>u</sup> Tabid. Theatr. pag. 111.      <sup>w</sup> De morb. mulier. Lib. I. Cap. XLV. Charter. Tom. VII. pag. 755.



That even the larger vessels may be broken by a great force, is too well known; how much more may this be feared of the tender vessels of the lungs: it seems rather strange that this should not oftener happen, and especially from a cough, which violently agitates the whole chest, and at the same time forces large quantities of blood into the vessels of the lungs: hence we see, that in a violent cough, the whole face swells, and the eyes are suffused with blood; as the blood cannot return from the head by the veins, the right ventricle of the heart having no room for it, and its passage through the lungs is obstructed, while it moves faster than usual in the arteries; and in the tussis serena, which is sometimes epidemic, we see many of those afflicted with it grow black in the face, and are almost suffocated; whence often a spitting of blood follows. I have heard from a physician, worthy of credit, that the intestines of a boy burst, who died in a fit of this cough. *Hoffman*<sup>x</sup> relates a case, wherein one of the vertebræ of the back was broke by the violence of a cough.

How great violence the lungs may suffer from shouting, singing, laborious efforts, was said §. 824. when we treated of the causes of a peripneumony; it is not strange, therefore, that a rupture of the vessels, and a dangerous hæmoptysis, should be caused by such means. *Antigonus*<sup>y</sup> burst his lungs by shouting in a battle; or, as others relate, by crying out for joy after the victory, *O faustum diem*, “O happy day;” he threw up a large quantity of blood, and being seized by a violent fever died; his lungs were touched before, but he would not give way to his disorder, hoping to expire gloriously in victory, and amid the slaughter of barbarians. There is the greatest danger of all, that an hæmoptysis should be produced, if a man, heated with rage, exerts his voice

<sup>x</sup> Medic. rat. & system. Tom. IV. part. 3. pag. 377.

<sup>y</sup> Plutarch. Agis & Cleomenes. Tom. I. pag. 819.

voice with great vehemence. Thus we read of *Sylla*<sup>z</sup>, *quod animi concitatione nimia, atque immoderato vocis impetu convulso pectore, spiritum cruore ac minis mistum evomuit*; “that inflamed with violent emotions of  
 “passion, and exerting his voice too forcibly, he  
 “hurt his breast, and expired in a rage, with an  
 “effusion of blood:” he was however, sixty years old, at which age the vessels are firm, and even begin to grow callous; on which account old persons are least subject to this disorder, and in them it seldom happens, but from some violent accident.

Hence *Hippocrates*<sup>a</sup> very wisely cautions, that when a person is recovered from an hæmoptysis, produced by such a cause, *ad ventum celeriter ne currat, neque equum, neque currum conscendat, vitet etiam tum clamorem tum excandescentiam periculum enim est redire morbum*, “he should not run swiftly against the  
 “wind, nor ride on horseback, nor in a chariot,  
 “and should avoid shouting and passion;” for says he, there is danger of a relapse: and elsewhere<sup>b</sup>, where he describes the diseases of the women of a city situated toward the north, after he has said, that they have few miscarriages, but difficult labours, he adds, *tabes etiam frequentes a partu contingunt, præ violentiâ enim ruptiones & vulsuras habent*; “consumptions  
 “also frequently come on after their labours, be-  
 “cause the difficulty of them occasions strains, and  
 “thence ruptures of the vessels.” Certainly in the last efforts of a woman in labour, when she is just at the point of delivery, a great strain is put on the vessels, especially if the woman is somewhat advanced in life, and at the first birth; and I have known the vessels of the brain burst, and an apoplexy follow on these occasions. In bodies of a tender frame, the vessels of the lungs are so strained by this effort, that an hæmoptysis is the consequence.

At

<sup>z</sup> Valer. Maxim. Lib. IX. Cap. 111.  
 Cap. 1. Charter. Tom. VII. pag. 639.  
 Aquis, N<sup>o</sup> 22. Charter. Tom. VI. pag. 192.

<sup>a</sup> De Intern. Affect.  
<sup>b</sup> De Aere Locis &



At the same time it is evident, that these causes will still be more likely to produce this effect, if a great part of the vessels of the lungs are obstructed by a schirrus or polypus, or so much compressed by some other humour, that they cannot transmit the blood freely; for then those vessels of the lungs which are still pervious, have so much the greater force to sustain, if the motion of the blood be suddenly accelerated by any cause. Thus *Hoffman*<sup>c</sup> observed in a young virgin, who had a difficulty of breathing, occasioned by a suppression of the menses. She threw up in coughing, an enormous quantity of blood, and at the same time several great, hard, fleshy lumps were extracted: the fauces, which on being examined, were found to be polypose concretions, which weighed more than four ounces. The preceding symptoms and the hæmoptysis, which proved mortal, seem to shew that the vessels of the lungs were obstructed with polypose concretions, which on the bursting of the lungs, were thrown out together with the vast effusion of blood; for the same reason it is, that an hæmoptysis sometimes follows, on a person's drinking a great quantity of cold liquors when he is very much heated: on another occasion, when we treated of the causes of a pleurisy, §. 881. we observed, that the ascending trunk of the vena cava, and the large right ventricle of the heart, reclined on the slender tendinous part of the diaphragm: hence, when the stomach is suddenly filled with cold liquor, there is reason to fear, lest the blood which is about to pass through the vessels of the lungs, coagulating by this sudden chill, should be entirely stagnated in their narrow extremities, and bring on a sudden and fatal peripneumony; or by bursting the vessels, cause a very dangerous hæmoptysis. *Cleomenes agmine raptim acto aquâ intempestive hausta sanguinis copiam rejecit & vox ei interclusa est*<sup>d</sup>.

“ Cleo-

<sup>c</sup> Med. ration. & system. Tom. III. Cap. xvi. pag. 365.

<sup>d</sup> Plutarch. Agis & Cleomenes, Tom. I. pag. 811.

46 Of a PHTHISIS PULMONALIS. Sect. 1198.

“ *Cleomenes* marching hastily with his forces, and  
 “ drinking water when he was heated, threw up a  
 “ large quantity of blood, and was rendered speech-  
 “ less;” and I have sometimes seen a like misfor-  
 tune from the same cause. *Trallian*<sup>e</sup> enumerates  
 a sudden and violent cold among the causes of an  
 hæmoptysis, as does also *Galen*<sup>f</sup>, who says, that  
 the cold does not of itself cause a rupture of the ves-  
 sels, but because the coats of the veins rendered  
 hard by cold, resist more against being stretched lon-  
 gitudinally, and thus are more easily broken; and he  
 sets down as the immediate cause of a rupture of the  
 vessels, either a violent motion, or a plethora. But  
 as the tender vessels of the lungs, through which the  
 blood moves in this viscus, have a great extent of  
 surface exposed to the air, if the cold be very  
 great, the vessels will be contracted, the fluids will  
 be condensed, and, by this means, the blood pro-  
 pelled from the right ventricle of the heart, will ex-  
 ert more violence on the vessels when their cavity is  
 straitened, and the blood almost congealed with cold,  
 is less fit to pass them. Hence *Hippocrates* says<sup>g</sup>,  
*frigium valde, venas frangit & tussim citat ut nix &*  
*glacies.* “ Violent cold, such as that of snow and  
 “ ice, bursts the vessels and occasions a cough;”  
 and the same observations occur in his aphorisms, as  
 was remarked §. 793<sup>h</sup>.

That an hæmoptysis should follow a wound is easy  
 to be conceived, and on this subject the reader may  
 consult what we have said before on wounds of the  
 chest.

Acrid, saline, aromatic, eatables; drink of  
 the like kind; a particular manner of living;  
 some diseases by which the quantity, acrimony,  
 velocity, rarefaction, and heat of the blood are  
 increased,

<sup>e</sup> Lib. VII. Cap. 1. pag. 286.      <sup>f</sup> De loc. affect. Lib. IV.  
 Cap. 11. Charter. Tom. VII. pag. 475.      <sup>g</sup> Epidem. VI. Sect.  
 XIV. Charter. Tom. VII. pag. 445.      <sup>h</sup> Sect. V. Aphor. 24.  
 Ibidem. pag. 209.



increased, on which account it happens so often in acute fevers, in the plague, small-pox, and scurvy.

It has already been said in this paragraph, that to persons inclined to this disease, an acrimony of the fluids is very dangerous, least the vessels should be corroded thereby, and the worst species of an hæmoptysis be produced. It is easy to conceive therefore, that if they eat or drink such things as are apt to produce an increased acrimony of the humours, and especially if the food likewise heats the body and rarefies their fluids; whence it is, that an hæmoptysis so often follows hard drinking; but all these dangers may be avoided by temperance.

But no man can flatter himself to live exempt from all diseases, by the force of which, sometimes the vessels are burst, sometimes the humours are so vitiated as to corrode the vessels, sometimes a great impetuosity of the blood, increased in its motion by a fever, concurs with an acrimony; but this was discussed before in the history of fevers, particularly §. 741. when the dangerous symptoms attending a burning fever were considered; it was there mentioned, that a spitting of blood sometimes proved mortal in this kind of a fever. *Diemerbroek*<sup>i</sup> saw a stout soldier who had the plague, seized on the 6th day of the disease with a violent hæmoptysis, and gave him over, as all whom he, or other physicians had attended in the plague, to whom this happened, died soon after. The soldier, however, recovered; although after the plague was cured the hæmoptysis frequently returned, and spitting of pus followed it, the author very justly esteemed this a rare case. We shall see hereafter §. 1396. that a very dangerous hæmoptysis sometimes happens in the small-pox. We observed, §. 1151. 3. that in the worst stage of a scurvy,

<sup>i</sup> De peste histor. 83. pag. 301, 302.

scurvy, hæmorrhages frequently happen in various parts of the body, and among the rest, from the lungs. It has also been remarked, that some poisons produce such acrimony in the humours, that the lungs being corroded, men die of a slow decay. We read in *Plutarch*<sup>k</sup>, that *Philip* contrived that a poison should be given to *Aratus*, the effects of which were not instantaneous, nor its acrimony very violent, but of such a quality, as to excite first a slow fever and a faint cough, and to bring on a gradual decay. He bore the disorder without much complaining, as though he had been attacked by some common disease, although he knew very well that poison had been given him; but when one day in his chamber, one of his acquaintance being present, he spit blood, he said, *O Cephalon!* these are rewards bestowed by royal friendship.

## S E C T. MCXCIX.

**H**ENCE (§. 1198.) it begins with a slight pain, a moderate heat, a sensation of anxiety in the chest, the blood is thrown up, for the most, of a florid, purple colour, and frothy, with a cough, and a wheezing of the lungs; and sometimes there are thrown up with it fibres, small membranes, parts of the arteries and veins, and bronchia: the pulse in these cases being soft, slender, fluttering, the patient pants, and perceives a salt taste in his mouth sometime before hand.

When an hæmoptysis is brought on by the causes enumerated in the preceding paragraph, some symptoms appear which accompany this discharge, or  
imme-

<sup>k</sup> *Aratus*, Tom. I. pag. 1051.



immediately precede it, with which it is proper we should be thoroughly acquainted; but it is easily understood, that no such symptoms precede an hæmoptysis, occasioned by some violence done to the lungs: as for instance, from a cough, shouting, &c. which were mentioned in the foregoing paragraph; for from such causes a sudden rupture of the vessels follows: but when an hæmoptysis is occasioned by anastomoses, or by a slow erosion of the vessels, it is usually preceded by certain symptoms. *Hoffman*<sup>1</sup> has observed, that a coldness and constriction at the extremities preceded an hæmoptoe just about to appear, as likewise particularly a weariness of the feet, wind in the belly, costiveness, an oppression of the breast, and a difficulty of breathing<sup>m</sup>. But elsewhere<sup>n</sup>, where he is treating of an hæmoptysis, he adds, to those already mentioned, the following signs, a shivering on the skin, and erection of the hairs thereon, the veins of the hands disappearing, a pain in the back, *donec sequente in faucibus titillatorio & secundum tractum asperæ arteriæ quasi pruriente sensu, sub calidâ ebullitione, & undulatorio in dextro-lattere motu, ipsa eruptio sanguinis incidat*, “till at last, “a kind of tickling being felt in the fauces, and a “kind of itching along the aspera arteria, a flush of “heat, and a fluctuating motion on the right side “succeed, and the hæmoptysis immediately comes “on.” In another place<sup>o</sup> he calls this fluctuation, *dolorem gravativum undulatorium circa diaphragma*, “a troublesome and undulatory motion and pain “about the diaphragm.” It has sometimes happened to me, to observe many of these symptoms in the course of my practice, though all seldom meet in one person; and I have seen persons who had been subject to an hæmoptysis several times, who knew it

VOL. XII.

E

was

<sup>1</sup> Med. ration. & system. Tom. II. pag. 141. <sup>m</sup> Ibid. Tom. III. pag. 62. <sup>n</sup> Ibidem. Tom. IV. Part 2. Sect. I. Cap. 11. Sect. VI. pag. 33. <sup>o</sup> Ibidem. Tom. IV. Part 2. Sect. I. Sect. IX. pag. 6.

was coming on, when they perceived a kind of tickling in the aspera arteria, a slight oppression of the breast, and that fluctuating motion one while in the right, and at other times in the left flank; and even sometimes being forewarned by the first appearance of these symptoms, being bled directly, they prevented the hæmoptysis which was just coming on.

It is not to be wondered, that patients who fear an hæmoptysis, or are terrified when this discharge of blood has already begun, should grow cold in the extremities, and that the veins of the hands should collapse; for this is the effect of fear, as was remarked on another occasion, §. 104.

But it is observed, that such a constriction in the extremities precedes other hæmorrhages, without any such terror; but this is very hurtful in an hæmoptysis, as the blood thus repelled from the extremities presses more violently on the vitals; for which reason *Bennet*<sup>p</sup> tells us, that it is almost always useful, either by friction or by gentle warmth, to recall the blood to the extremities. But that pain which precedes or accompanies an hæmoptoe, is generally very inconsiderable: nay, *Galen*<sup>q</sup> says, they who spit blood feel no pain, because the lungs are soft and have few nerves; which he thought were only distributed over the external membrane of this viscus, but did not penetrate the substance of the lungs: but soon after he makes some exceptions to this axiom, so that he affirms only, *thoracis dolores intensiores esse pulmonis remissiores*, “that the pains of the lungs are mild, and “those of the chest more intense.” The pain, however, in an hæmoptysis will be very slight, or perhaps there will be none at all, if the discharge be made by an anastomosis of the blood-vessels; for then the vessels suffer no violence, but only their orifices are gradually widened: whence *Galen*<sup>r</sup> affirmed,

<sup>p</sup> Tabid. Theat. pag. 71.      <sup>q</sup> De locis affectis Lib. IV. Cap. VIII. Charter. Tom. VII. p. 467.      <sup>r</sup> Ibidem. Lib. V. Cap. v. p. 492.



Sect. 1199. Of a PHTHISIS PULMONALIS. 51

firmæ, *ob ruptum vas sanguines rejections cum doloribus fieri, qui rupturæ locum designant, nec secus quæ venæ erosione vel derosione, sive aliter quomodo libet nominare volueris, abortæ sunt quæ vero per anastamosis fiunt, hæ omnino doloris sunt expertes,* “ that the hæ-  
 “ morrhages caused by the rupture of a vessel, are  
 “ accompanied with a pain which is felt in the part  
 “ where the rupture is; and the same thing happens  
 “ when this is caused by an erosion of the vessels:  
 “ but such hæmorrhages as are produced by anasto-  
 “ mosis, are altogether void of pain.”

But the blood which is spit out generally is of a florid, scarlet colour, because it is arterial; and as soon as it comes into the bronchia, a cough being immediately occasioned, expels it, nor has it time to stop and coagulate there. When from a small vessel, either corroded or broken, a small quantity of blood only is discharged, that may stagnate, form itself into clots, and in that form be afterwards thrown out by a cough, as shall be said by and by: but that cough is seldom very violent in the time of an hæmoptysis, but is rather a slight tickling and irritation; because the fluid blood is easily thrown up from the bronchia, at the same time there is a wheezing in the lungs, as the air mixed with the blood issuing out, and inhering in it on account of the natural viscosity of the blood, is not readily extricated from it, and therefore the blood comes out from the lungs with a froth upon it: on this account, §. 300. where we treated of the wounds of the thorax, the discharge of frothy blood, either from the blood, or spit up from the mouth, was enumerated among the signs, which shewed that the wound had penetrated the cavity of the breast: hence Hippocrates<sup>s</sup> says, *qui spumosum sanguinem expuunt bis ex pulmone educio sit*, “ when  
 “ the blood spit out is frothy, the discharge thereof  
 “ is from the lungs:” which Galen<sup>t</sup> also confirms,

E 2

where

<sup>s</sup> Sect. V. Aphor. 13. Charter. Tom. IX. pag. 201. <sup>t</sup> Galen de locis affect. Lib. IV. Cap. viii. Charter. Tom. VII. p. 4

where he treats of an hæmoptysis, and of the signs which shew from whence the blood proceeds: these are his expressions; *quo circa diligenter considerare oportet, an spumofum simul quidpiam educatur id enim efficacissimum est indicium educationis e pulmone*; “wherefor  
 “we should carefully observe whether any froth appears in what is spit up, for that is an evident sign  
 “that the discharge is from the lungs.”

In the mean time we must acknowledge, that there are other passages which seem to shew, that this frothy blood may also issue from other places: thus we read in the *Prænotiones Coacæ* <sup>u</sup>, *qui spumofum sanguinem vomunt dolore infra septum transversum, non existente a pulmone vomunt*, “they who throw up frothy blood  
 “without any pain below the diaphragm, throw it up  
 “from the lungs;” it is true, the word ἐμεστοι is used in the text, which, as it usually signifies vomiting hence we may conceive, that the liver being obstructed, and the passage of the blood hindered through the vena porta, it flows back through the vasa brevia into the stomach, and afterwards is thrown up by vomit; at the same time we find that a copious discharge of blood from the lungs is called vomiting blood, especially by the poets, who used the expression *purpuream vomuisse animam*, concerning those who perished by a wound piercing the breast. Thus we read also in *Herodotus* <sup>w</sup>, that *Pharnachus* being thrown from a startled horse who reared upright,  *collapsus, sanguinem vomuit, & morbus transit in tabem*  
 “He falling, vomited blood, and fell into a consumption:” in which place the vomiting of blood seems to mean an hæmoptysis, as that is usually followed by a consumption; and the word φθίσις here used by *Herodotus*, in common acceptation, denotes a disease of the lungs: however, in other places, *Hippocrates* <sup>x</sup> says expressly, *quicumque spumofum sanguinem spuunt, dextrum hypochondrium dolentes de hepate spuunt*

<sup>u</sup> N<sup>o</sup> 432. Charter Tom. VIII. pag. 877.  
 pag. 408.

<sup>w</sup> Lib. VI.  
<sup>x</sup> Coac. Prænot. N<sup>o</sup> 408. Chart. Tom. VIII. p. 87



*puunt & multi pereunt*; "they who throw up frothy blood, and have a pain in the right flank, throw it up from the lungs, and many of them die:" afterwards <sup>y</sup> he repeats the same prognostic, and adds only, *moriuntur*, "and they die."

These passages of *Hippocrates*, however, do not demonstrate that the frothy blood spit out, comes immediately from the liver, but rather that the obstruction of the passage of the blood through this viscus, is the remote cause from whence the hæmoptysis follows. In the preceding paragraph, it was shewn, that an hæmoptysis often arose from the suppression of any customary sanguineous excretions; it would be using the expression in a very figurative sense, to say a woman, who spit blood from her menses being suppressed, vomited blood from the uterus. All the blood in its return from the abdominal viscera, must necessarily pass through the liver; if this viscus therefore, labours under some obstruction, which impedes the passage of the blood through it, it should seem that spasms in the abdomen will ensue, which will repel the blood into the arteries, and thus the other vessels being over-filled, an hæmoptysis may be produced; in which case the blood which is spit out, comes immediately from the lungs, although an obstruction of the liver may justly be esteemed the remote cause of this evil; but as in such a case, the right flank is distended and painful, and sometimes also a pain is felt in other parts of the abdomen, as was said in the chapter where we treated of the hepatitis, or inflammation of the liver, and the various kinds of jaundices; we see the reason why *Hippocrates* mentions these symptoms of a pain in the left flank, and under the diaphragm; it is certainly very right to attend to all these things in the treatment of this disease. We read in *Ballotius* <sup>z</sup>, a very remarkable case of a young man of twenty, labouring under an hæmoptysis;

E. 3

*pulmonibus*

<sup>y</sup> Ibid. N° 450. pag. 378. <sup>z</sup> Epidem. & Ephem. Lib. I. pag. 41.

*pulmonibus valde metuitur omni arte studetur pulmonibus. Forte fortuna, dum hypochondria manuum blandè continguntur pulsus percipitur, ac veluti παλμὸς τίς, necnon ab hypochondriis decurrentis sanguinis, ac partes superiores affectantis cursus percipiebatur, ac si manu sanguis duceretur. Prout partes superiores petebat horror quidam excitabatur; at tum confestim rejiciebatur ex pulmonibus. Talis rejeſtio erat hæmorrhagiæ loco que juvenibus erat familiaris. Relictis tum præſidiis quæ pulmoni dicabant conversum eſt ad hypochondria studium expurgatâ innumerâ colluvie, prærepta eſt ei rejeſtioni sanguinis occasio, quod notandum valde eſt; “ the lungs (ſays “ this author) were thought to be in great danger, “ and all precautions were taken to ſecure them “ from being injured; by chance, on ſtroaking the “ ſhanks gently, a pulſation, and, as it were, a kind “ of palpitatio, was felt; and even the courſe of “ the blood running up from the hypochondria, “ and tending to the upper parts, was ſenſible, as “ though it followed the motion of the hand: as it “ got upward, a ſhivering was felt, and preſently “ the ſpitting of blood began: this diſcharge was “ inſtead of another hæmorrhage, which was riſe “ among young perſons at that time. Suspending “ therefore, the remedies intended for preſerving “ the lungs, all the phyſician’s attention was turned “ to the hypochondria; and the abdomen being well “ cleaned by purges, the cauſe of this diſcharge of “ blood was removed; which is well worthy of note.”*

*Bennet* <sup>a</sup>, obſerving like ſymptoms in his practice, (in which author, almoſt every thing that relates to this diſeaſe is to be found) calls them fluxions to the pectoral regions; and warns us, *apud illos maxime ſequi fluxiones quibus membra amputantur, aut quibus a vaſorum exilium inſarctione, partes remotiores impervie redduntur*; “ that thoſe fluxions attend thoſe moſt “ who have loſt a limb, or where the remote parts “ are rendered impervious by the obſtruction of the “ ſmall

<sup>a</sup> Theatr. Tabid. pag. 13, 106, 107.



“small vessels.” Elsewhere, he says, *fluxio ex sanguinis restagnatione sive imminutâ διαδόσει, in vasis cordi vicinis periculiosior quam quæ ex partibus distantioribus in pectus suscipiatur*; “a fluxion caused by a stagnation, or difficult passage of the blood through the vessels near the heart, is more dangerous than that which is derived upon the breast from more distant parts.” Soon after he adds, *magis periclitantur pulmones a pressura per denegatam hepatis percolationem, quam a regurgitatione ab infarctis lienis vasculis*; “the lungs are more endangered by a pressure, arising from the passage of the blood through the liver being obstructed, than from an overflowing of the blood, driven back upon them from the obstructed vessels of the spleen.”

*Aretæus*<sup>b</sup> in the same manner tells us, that an hæmoptysis may proceed from a disordered spleen or liver: but he adds, this is not easily, or constantly produced from such a cause, as these viscera can more readily evacuate that which oppresses them into the stomach and intestines. He adds, however, that it is neither impossible, nor incredible, that they should discharge themselves upwards, through the lungs and the artery (meaning the *aspera arteria*); as in fevers, occasioned by stoppages of the spleen and liver, an hæmorrhage happens from the nostril, on that side in which the viscus affected is situated.

We are to remark, that it is said in our text, that the blood comes out of a florid and scarlet colour, *for the most part*; because it sometimes happens also, that it issues forth grumous and black; which happens, when being collected in a small quantity only in the lungs, it remains there some time before it is thrown out: for if only a small vessel lets out the blood, a cough will not ensue immediately, the blood will lodge, and grow into clots; but in a more violent hæmoptysis, it is spit out, of a florid

E 4

scarlet

scarlet colour. When the ancient physicians observed such grumous blood spit out in small quantities, they suspected it not to come properly from the lungs, but rather from the chest, especially if there were a pain in any part of the breast. Thus we read in *Galen*<sup>c</sup> as follows, *quum igitur dolente thoracis parte quâpiam, sanguinem quis tussiendo rejecerit neque multum, neque rubrum, sed jam nigricantem, grumumque, huic thorax primariâ affectione infestatur, at sanguis per pulmonem educitur ita, at in suppuratis affectionibus pus, quod inter thoracem & pulmonem, sensus judicio contineri percipitur. Sic & pleuriticis sputum quovis modo coloratum apparet*; “ when a pain is felt  
 “ in some part of the thorax, and the patient  
 “ coughs, and spits up blood, and that not in large  
 “ quantities, nor red, but black and grumous, the  
 “ thorax is the primary seat of the disorder; but the  
 “ blood is drawn through the lungs, as the pus is in  
 “ suppurations, which we perceive by the feel to be  
 “ lodged between the lungs and the chest; thus also  
 “ the pus in pleuretic persons, appears tinged with  
 “ different colours.” Like observations are to be found in *Trallian*<sup>d</sup>. How the spitting in a pleurisy discharges the morbid matter, I have endeavoured to explain at large, §. 888. N° 6. However, if no pain be felt in the chest, the spitting of such grumous blood in small quantities, cannot be ascribed to such a cause, but the origin of it is rather to be sought in the lungs. It has been said already, that the ancient physicians enumerated three ways by which the vessels might let forth their contained fluids, namely, 1. A rupture from violence. 2. An erosion from acrimony. 3. Anastomosis, or such a dilatation of the orifices of the vessels, that they can let such fluids pass through them, as cannot be admitted to pass in the natural state of these vessels.

<sup>c</sup> De Locis Affectis, Lib. IV. Cap. VIII. Charter. Tom. VII, pag. 467.      <sup>d</sup> Lib. VII. Cap. I. pag. 288.



vessels. *Galen*<sup>e</sup> adds to these a 4th way, which he calls διαπύδνσις, when the contained fluid, as it were, transudes through the unbroken membranes of the vessels: and he says, that this may happen when the coats of the vessels become thinner, and the blood is more dissolved, so as to pass through the pores of the vessels as through a sieve. Quicksilver gives no unapt instance of this διαπύδνσις, when it is squeezed through leather to purify it, for it transudes in minute drops, the leather remaining intire: but although this may seem not altogether impossible, yet it is hard to conceive that the red blood, which is the most dense of the human fluids, should sooner force its way through the pores of the membranes of the vessels, than pass from the arteries into the veins. *Galen*<sup>f</sup> seems to have perceived this objection, for he presently subjoins, that a diapedesis may sometimes proceed from an anastomosis of the smaller vessels.

It is certain, from the experiments which were mentioned in the account of the pleurisy and peripneumony, that fluids injected into the pulmonary artery, easily pass into the bronchia: the injection with wax into the arteries of the lungs, makes those vessels which branch over the whole surface of the air-vessels of the lungs, apparent to the eye; if some of these small vessels be broken, or their extremities be dilated, they may effuse a small quantity of blood, which stagnating in these places, is spit out afterwards in clots; but it is to be noted besides, that the cellular membrane is interposed all over the lungs, between the branches of the trachea; and when the lungs are injected with wax, inflated and dried, innumerable vessels appear distributed over the surface of this membrane; if now, either a rupture, or an anastomosis, happen among these small vessels, the blood collected there will not be spit out, but stagnating on the outside of the air-vessels of the lungs,

<sup>e</sup> Method. Medend. Lib. V. Cap. 11. Charter. Tom. X. pag. 105. <sup>f</sup> Ibidem.

lungs, will make an ecchymosis, or effusion of fluids, such as happens in a bruise under the skin, remaining whole, and is observed in the scurvy, and in other diseases, wherein the vessels are corroded by the acrimony of the humours. It is true, that such effusions, especially when they proceed from some external force, are often gradually re-absorbed and disappear; but in scorbutic habits, they sometimes not only remain a long time, but also frequently degenerate into obstinate ulcers: and it is to be observed, that blood effused in the lungs, is kept in by very tender membranes; so that if the fluid becomes more acrid by stagnation, or from its quantity distend these membranes beyond their strength, then bursting them, it finds a passage into the bronchia; whence we may conceive another cause of spitting grumous blood. *Bennet* <sup>s</sup> seems to have suspected this very thing, for when he speaks of the acrimony of the humours, he says, this is not only pernicious by altering the crasis of the blood, but these acrid humours, *extra vasa depopulantur*, “ break the confines  
 “ of the vessels:” and he adds, the vessels irritated by this acrimony, endeavour to free themselves from this enemy, *idque per sanguinis seclusionem; qui sanguis si vasa pectoris perepserit ἀποπλήσῃ, sequentem tabis quæ phthisis dicta præmonitorem, vel ἐνχορμῶσιν procreat. Venas enim & arterias, per totam corporis cavitatem internam membranalis, vestiti & munivit natura, quibus circulationi externos terminos sicut per cutis parietes internos posuit. Hinc membranulis si accubuerit sanguis e vasculis pectoralibus secretus, ecchymomatis interni nomine merito indigitatur;* “ and that generally by an  
 “ hæmorrhage; which, if it happen in the vessels of  
 “ the lungs, causes either an hæmoptysis, the fore-  
 “ runner of a phthisis, or an ecchymosis; for na-  
 “ ture has cloathed the veins and arteries through  
 “ the whole internal cavity of the body with mem-  
 “ branes, by which she has set bounds to the cir-  
 “ culation,



“ culation, as well as by the external covering of  
 “ the skin; if the blood extravasated from the  
 “ vessels of the breast, lodge in these membranes,  
 “ such an effusion may properly be called an inter-  
 “ nal ecchymosis.” At the same time it appears,  
 that if the blood extravasated by such means be-  
 comes acrid by long stagnation, the larger vessels  
 may in time be corroded by it, and thus after clots  
 of blood have been spit up; a large quantity of fluid  
 blood may be thrown up by a violent hæmoptysis,  
 which Galen<sup>b</sup> has also observed; nay, he says, that  
 there has been so great an erosion in some cases, *ut*  
*non pauci sic affecti pulmonis quasdam partes una cum*  
*sanguine ejecerint*, “ that many persons have spit up  
 “ pieces of the lungs together with the blood.”

Among the signs of an hæmoptysis from the lungs,  
 he reckons this as one; *si quis bronchii partem quon-*  
*dam, aut arteriæ, aut venæ tunicæ, aut etiam pulmo-*  
*nis ipsius carnis excidit*; “ if a person spit some part  
 “ of the bronchia, or of the coat of an artery, or  
 “ vein, or of the fleshy substance of the lungs them-  
 “ selves;” and elsewhere<sup>i</sup> he asserts the same thing,  
 and avers, that he has seen a considerable portion of  
 a vessel spit out in coughing, which, by its size,  
 plainly shewed that it came from the blood-vessels of  
 the lungs, as the trachea has no vessels so thick:  
 elsewhere<sup>k</sup> he relates, that he saw a youth of eighteen,  
 who, after having been afflicted many days with a  
 cough, began first to spit up warm florid blood in  
 small quantities, and afterwards a part of the mem-  
 brane which lines the internal surface of the aspera  
 arteria; from the thickness of the membrane spit up,  
 and from what the patient felt, he believed it to  
 have been part of the internal coat of the larynx: he  
 observes also, that his voice was much injured by  
 this

<sup>b</sup> De Locis Affectis, Lib. IV. Cap. viii. Charter. Tom.  
 VII. pag. 466, 467.

<sup>i</sup> Ibid. Lib. I. Cap. 1. Ibidem.

pag. 379. <sup>k</sup> Method. Medend. Lib. V. Cap. xii. Charter.  
 Tom. X. pag. 123, 124.

this accident, but that the patient recovered after a long time. In another place, in which he appears to relate the same accident<sup>1</sup>, he says, that though the disease was cured beyond hope, yet the voice remained affected by the misfortune. Observations of similar accidents are to be found in *Tulpius*, who concluded, that in some of these cases, an intire vein of the lungs was spit up, and he gives two figures describing it; a physician whose lungs had long been weak, after taking an antimonial emetic, threw up a large piece of the lungs and presently expired. *Tulpius*<sup>m</sup> has also given a figure of this piece, which he believed to be a part of the lungs. A like history is to be found in the *Acta Eruditorum*<sup>n</sup>, with a figure describing it, by an anonymous author; who however, at the end of his account, candidly confesses, *venosum seu venæ pulmonalis propaginem, hoc vas longitudine palmam æquam fuisse, conjicere jubebat hujus substantiæ textura, ast per fissuram ejus ubi a trunco majori illud recepire probabile erat; substantiam carneam polypo non ab similem ac totius fere hujus, tragædiæ aëtozem pri-marium intueri licebat*; “ that although the texture of  
“ this substance, which was an hand’s-breadth long,  
“ inclined him to conjecture that it was part of the  
“ pulmonary vein; yet at the fissure of it, at the  
“ part where it was probably separated from the  
“ larger trunk, there appeared a fleshy substance,  
“ not unlike a polypus, which was, probably, the  
“ cause of this unhappy accident.” *Tulpius*, with other physicians, greatly wondered that the parenchyma, or fleshy substance of the lungs themselves, could be so dissolved without a previous suppuration; that such a branch of a vessel should appear quite unconnected and unadhering to the substance of the lungs, *ac si otiosus anatomicus, removisset circumpositi visceris impedimentum*; “ as though some anatomist had  
“ leisurely

<sup>1</sup> De Locis Affectis, Lib. I. Cap. 1. Charter. Tom. VII. pag. 379.      <sup>m</sup> Lib. II. Observat. Med. Cap. XII, XIII, XIV.

<sup>n</sup> Anno 1683. pag. 218, 219.



“ leisurely cleared away every part of the surrounding  
 “ viscus, which any where adhered to it :” and he was  
 the more confirmed in his opinion, by seeing the se-  
 parated veins publicly examined by his master *Peter*  
*Paw*, formerly a celebrated anatomist : hence he  
 looked on this as a wonder before unheard of, the  
 account of which posterity might contemplate with  
 wonder, although they were not likely ever to see  
 such another instance, or to read of any such in the  
 records of physic ; thus far *Tulpius* : but certainly  
*Galen* had seen like accidents many ages before, and  
 many such have been observed since *Tulpius* : *Ruysch*°,  
 a more accurate examiner, mentioning a polypus  
 found in the longitudinal sinus, which, when dried,  
 resembled a vein, adds the following caution, *quo*  
*ipso multi fuere decepti in pectoris affectibus, dum tussiendo*  
*tales polypos ejecerunt credentes, sese venas expectoratas*  
*ostendisse* ; “ by which resemblance, many have been  
 “ deceived, with regard to accidents from disorders  
 “ of the breast, when, having thrown up polypuses  
 “ of this kind by coughing, they think they have  
 “ spit out a vein.”

Certainly it is not altogether improbable, that the  
 lungs may be lacerated by a wound, or some other  
 violent cause ; and that some pieces of the lungs,  
 thus lacerated, may be thrown up ; but when no  
 such causes have preceded, such an accident is very  
 unlikely. Such polypose concretions, are sometimes  
 spit out after a very violent hæmoptysis, but the  
 blood in this case is effused into the bronchia, and  
 unless it be presently spit out, it will coagulate there,  
 and readily assume the form of the vessel in which it  
 has lodged ; and the longer such a polypus stays  
 there, the more dense it becomes, and sometimes  
 grows entirely white : if now, we reflect, that the  
 patients, on account of their weakness from loss of  
 blood, or by the advice of a physician, keep as quiet  
 as possible, abstain from speaking, and suppress their  
 cough

° Mus. Anatom. five Catalog. rarior. pag. 122.

cough as much as possible, it is not at all strange, that part of the blood fallen upon the bronchia, should coagulate into a polypose substance, and after some time be thrown out by a cough, especially if the hæmoptysis return; this, I think, explains *Tulpius's* unheard of miracle.

To the same origin, we may refer those membranous bodies which are spit up sometime after the hæmoptysis. A peasant, thirty years old, was seized with this complaint, and took allum, and some styptic liquor given him by a physician; the spitting of blood was stopt, but on his asking my advice, two months afterwards, I thought there was cause to fear an ulcer of the lungs, as he had a constant slight fever, and his saliva was purulent, thin, and tinged with blood, I prescribed mild, detergent, and balsamic remedies; he came back to me about a month afterwards, quite free from fever and cough; but he shewed me a membranous substance, tolerably thick, which he had thrown up in coughing, greatly to his relief: I was able to divide this concreted substance into thin lamellæ, which, on examining them with the best microscopes, I found to be perfectly homogeneous; nor could I discover any thing fibrous or organic in their texture.

*Kaau*, in his book *de Perspiratione Hippocraticâ*, relates a wonderful case of *Dringenburg*<sup>p</sup>, a very skilful surgeon at the *Hague*, who without any preceding hæmoptysis, without a fever, difficulty of breathing, pain, or any other symptom, besides a gentle cough, spit up an incredible quantity of matter concreted in the bronchia, and having the figure of those vessels. But when the lungs are suppurated, it is not unlikely, but that solid pieces of this viscus may be separated from it and spit out; but these are usually of a small size: thus *Bennet*<sup>q</sup>, when he is describing the signs of a very bad consumption, which baffles

<sup>p</sup> *Kaau Perspirat. Hippacr. pag. 114, & seq. Theatr. pag. 104.*

<sup>q</sup> *Tabid.*



baffles all the physician's skill, says, after the excretion of pus of the worst kind, *deinde pulmonem pariterque vasculorum nec non membranarum eorum distrigmenta succussa deducuntur*, "small shreds torn from  
 " the lungs, their vessels and membranes are thrown  
 " up." What occasioned *Tulpius's* astonishment was, that so great a dissolution of the parenchyma of the lungs should be effected without previous suppurations. The pulse is slow, soft, and fluttering, at the time of an hæmoptysis, because the blood which comes from the right ventricle, passes, diminished in its quantity, to the left ventricle, as part of it is effused into the air-vessels of the lungs; at the same time it is to be considered, that men are generally terrified when they find themselves spit blood, which also occasions a panting, which is also caused by the blood effusing itself on the bronchia. A brackish taste in the mouth frequently precedes an hæmoptysis, especially when this is caused by an erosion of the vessels from too great an acrimony of the humours: it appears from what has been said before, that this is sometimes a saline acrimony, and we shall afterwards see in treating of the cure of a phthisis, that a sweat, excited by proper remedies, is sometimes of use; which sweat descending down the face to the lips, has manifestly a salt taste. *Bennet*<sup>r</sup> gives us the following remarks; *in omni sanguinis effusione per superiora particulâ quæ in hæmorrhagia primâ accessione exierit salsuginosior, quæ vero sub ventura magis edulcorata quod quivis gustu sentiet, qui sanguinem extussierit*; "in every evacuation of blood upwards, the  
 " drops which come out in the beginning of the  
 " hæmorrhage are salter, and those which succeed  
 " are of a sweeter taste, as every one may find  
 " by his palate who has ever coughed up blood." Certainly, when a saline acrimony abounds in the blood it is not strange, that the saliva, which is a fluid secreted from the blood, should have a salt taste:

<sup>r</sup> Ibidem. pag. 15.

taste: besides, we find, that in the beginning of a coryza, there distils from the nostrils a thin humour, which is evidently salt, and frequently occasions pain and excoriation of the inside of the nostrils, and of the upper lip. We observe like things happen in the lungs, when a catarrh falls on the breast, from whence a troublesome and painful cough is excited, and then a thin and sharp saliva is spit out: but when either spontaneously, or by means of a mild diet, and remedies of the like kind, that acrimony is softened, then the coryza and catarrh are ripened, and a well digested stant matter is excreted from the nostrils, and thrown up by spitting: if such a symptom appear in a body inclined to an hæmoptysis, there is reason to fear such an hæmorrhage will break forth when this brackish taste has preceded. *Bennet* remarked, as was mentioned in the preceding paragraph, *in nivium & grandinum congelationibus & cælo pluviioso hæmoptosicos magis tentari*, “ that persons sub-  
 “ ject to an hæmoptysis, were most in danger of its  
 “ returning when it snows, or hails, or in rainy wea-  
 “ ther:” now these kinds of weather chiefly promote coryzas and catarrhs.

It is also to be noted, that although the tongue be the principal organ of taste, yet that tastes have been found to arise from causes residing in other parts of the body: thus from acrid bile collected in the stomach, a bitter taste is perceived in the mouth, as was noted in the history of fevers; perhaps also a salt humour, secreted from the pulmonary arteries into the bronchia, may excite a salt taste in the mouth; and this seems probable, especially from the remark quoted from *Diemerbroek*, §. 888. where we treated of the cure of a pleurisy by spitting, *viz.* that after bit-  
 ters had been injected into the cavity of the thorax, by means of the paracentesis, the patients perceived a bitter taste.



S E C T. MCC.

**I**T is cured, 1st, By copious bleeding every third day, and that repeated to four times, or till the inflammatory crust entirely disappears. 2dly, By cooling, thickening, styptic, softening medicines long continued, and mixed now and then with the mildest balsamics. 3dly, By regulating the non-naturals, so as to make them as contrary as possible to the causes of §. 1198. especially by constantly adhering to a very temperate and mild way of living and diet, to which a milk diet principally belongs. 4thly, Correcting the specific nature of the cause, or of the particular disease which has occasioned it.

We are next to consider the cure of an hæmoptysis, which will be discussed under the four following heads.

1st, All physicians sufficiently agree in the necessity of bleeding in this disorder, and that at the very beginning, when the patient first spits blood; and it will be still better, if the physician, foreseeing an impending hæmoptysis from the symptoms above enumerated, prevents it by a timely bleeding; but we are now supposing the disease already present.

Bleeding is adviseable in an hæmoptysis for two reasons; principally, that the quantity of the blood circulating through the vessels may be lessened, and by that means the vessels be less distended, and the blood returning through the veins in a smaller quantity to the heart, the heart itself may contract less forcibly, and also to prevent an inflammation.

Before, in treating of wounds, it was observed, that some wounded persons had recovered after very dangerous wounds; even of the larger arteries, when

they were reduced to the greatest weakness from the violent effusion of blood, and were even left for dead: life, however weak, still remained, and thus an opportunity was given for consolidating the torn artery. §. 161. A surprising case was related of a man, whose right axillary artery was cut with a knife, who recovered, after having been left for dead. A vessel broken in the lungs, will leave the whole force of the right ventricle impelling the blood upon it; unless the action of the heart therefore be weakened by bleeding, the hæmoptysis will be perpetuated; and there will be a danger, lest the hiatus of the broken vessel being enlarged, the patient should die of a sudden effusion of blood: wherefore, *Hippocrates*<sup>s</sup> advises, that we should prevent this disorder before the hæmorrhage begins, and the hiatus of the ruptured vessel is considerable; and if this be done, he says, the patient may recover. *Trallian*<sup>t</sup> approves bleeding, when the hæmoptysis is occasioned by a rupture of the vessels; but condemns this practice in an hæmoptysis arising from an erosion of the vessels, because, in this case, the patients are dry and emaciated<sup>u</sup>. But it is easy to see, that there is the same danger of the hæmoptysis being profuse when the vessel is corroded, as when it is broken, and therefore that the same indication takes place. It is true, indeed, that more copious and frequent bleeding is necessary for persons of a robust and warm constitution, than for those who are weaker; but is, however, necessary for these also, to prevent the further laceration of the torn vessel: but when so great a quantity of blood comes forth in an hæmoptysis, as that the vis vitæ becomes very languid, it is sufficiently plain that bleeding is not necessary; because that very disposition of the body exists, which it is the design of bleeding to produce. If therefore the face, lips, and eyes have lost their colour, if the pulse be weak, the extremities cold, and the

<sup>s</sup> De morbis Lib. I. Cap. vi. Charter. Tom. VII. pag. 536.  
<sup>t</sup> Lib. VII. Cap. 1.      <sup>u</sup> De morb. Lib. VII. Cap. 1. pag. 296.



the veins appear to be collapsed, the strength is then sufficiently weakened, and the hæmoptysis will cease, unless the hiatus of the corroded or lacerated vessel in the lungs be so great, that all the blood issues by the passage, and death ensues. It is however, to be remarked, that in persons taken with a spitting of blood, this paleness sometimes proceeds from the terror with which they are seized, although they spit up but a small quantity of blood; but this paleness is soon removed, the collapsed vessels become visible again, if the physician raises the patient's spirits by encouraging expressions, and in this case bleeding is still proper.

An hæmoptysis generally decreases after bleeding, or even quite stops, unless some large branch of the pulmonary artery be torn or eroded; but there remains a danger lest it should return, wherefore, it is most times adviseable to repeat the bleeding: but the intervals between the bleedings, how often they are to be repeated, and what quantity of blood is to be taken away at each bleeding, can only be determined by the particular symptoms which a skilful physician will observe in each person's case. I am accustomed to attend principally to the following circumstances. If the hæmoptysis ceased after the first bleeding, and the patient felt no pain in his breast; if the pulse were equable and slow, but not full; if the heat of the whole body, and especially of the extremities, were less than in sound health; the breathing quiet and unembarrassed, I deferred a second bleeding for three or four days; but as soon as the pulse began to grow fuller, and the heat of the body, and in the extremities equal to, or exceeding that of a healthy person, a tension, or an obtuse pain were felt in the breast, the cough grew worse, I repeated the bleeding immediately, even if these symptoms shewed themselves but a few hours after the first bleeding; and the greater or less quantity of blood to be taken away, depends likewise on the same symptoms: for the

whole business is so to diminish the quantity of blood, that the vessels may be less distended; so to weaken the vis vitalis, that the blood may pass through the vessels with less impetuosity, that there may be a possibility of consolidating the ruptured vessel, and that the cicatrix, which begins to be formed, and is yet weak, may not be opened again. Hence it is sufficiently evident, there can be no universal determinate rule given, but that a constant attention is requisite to what passes in the patient. I confess, that I have sometimes observed, that inflammatory crust, which was mentioned in the history of the pleurisy, also in the blood of persons taken with an hæmoptysis: but however, it does not frequently appear, although the symptoms enumerated above call for repeated bleeding; besides, we are not entirely certain what this inflammatory crust, or size upon the blood is: if, for instance, the blood let out of the vein be put in three basons, this crust appears in the first bason and not in the rest; sometimes it is to be seen only in the second and third bason, although the blood has flowed from the orifice in a full stream. I have seen a man who threw up a very large quantity of blood in an hæmoptysis; this blood was received in a bason, and no crust appeared upon it: whereas, his blood drawn from the vein by the lancet, had a very thick and tough crust upon it; so that this does not appear a certain sign, by which to regulate our proceedings in the cure of an hæmoptysis. Generally, as *Sydenham*<sup>w</sup> tells us, bleeding frequently repeated is of service in the cure of this complaint; but the direction of it must be left to the judgment of the physician. It will always be safer, rather to exceed in lowering the patient's strength, than to incur the risk of a return of the hæmoptysis.

But bleeding is serviceable on another account. It is certain, that the ancient physicians apprehended very great danger, when an inflammation or fever accom-

<sup>w</sup> Sect. VI. Cap. VII. pag. 362.



Sect. 1200. Of a PHTHISIS PULMONALIS. 69

accompanied or followed an hæmoptysis, and with very good reason ; because, in those circumstances, an ulcer of the lungs, and an incurable consumption might be expected. It was said before, (§. 1198.) that *Galen* almost despaired of a cure, when an inflammation came on in an hæmoptysis. *Aetius* \* likewise insists strongly on the necessity of trying all means to cure the wound in the lungs while it is fresh, before it begins to be inflamed ; for if an inflammation once comes on, there is little hope of closing the wound, and the cure of the disease will be greatly protracted ; for the pus and ichor must be cleansed away after the inflammation is subdued, and the patient must afterwards be treated as a person in a consumption. A like remark is to be found in *Hippocrates* †, *sanguinem spuentibus confert, ut sint sine febre, & tussiant ac doleant leviter & ut sputum tenue fiat ad dies bis septem. Febricitare autem & tussire ac dolere vehementer, & sanguinem recentem semper spueredamnosum.* “ It is happy for those who spit blood “ to be without a fever, and to have a slight cough, “ and but little pain, and that what is spit up should “ be thin for fourteen days ; but to be feverish, and “ to cough violently, and feel great pain, and al- “ ways to spit fresh blood, is pernicious.” But from what has been already said in the history of inflammations and acute inflammatory diseases, it is evident that bleeding is of excellent service in such disorders ; and §. 610. it was proved, that bleeding greatly con- duced to moderate the vehemence of fevers ; the usefulness therefore of bleeding in an hæmoptysis, is sufficiently apparent.

2. The impetuosity, and excessive quantity of the humours, being thus diminished by bleeding, we enquire next, what are the best remedies for the cure of an hæmoptysis. Mention has already been made, §. 228. of such things as are proper to stop

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\* Lib. VIII. Cap. LXIX. pag. 171. versa.

† Coac. Prænot.

Nº 427. Charter. Tom. VIII. pag. 877.

an hæmorrhage from a wound; but it easily appears, that the greater part of these can have no place in this disorder, in which the surgeon's hand can have no access to the injured part; astringent remedies appear almost the only suitable ones; but still the difficulty remains, how to convey their efficacy to the part affected; for these remedies act either by inspissating the fluids, or as astringents on the solids, or by both effects combined, they have the quality of stopping hæmorrhages; but if we could suppose that the entire efficacy of such remedies could reach the lungs, certainly they would not act only on the broken vessel, but on all the other vessels of this viscus; so that by inspissating the fluids and contracting the vessels, the free motion of the blood through the lungs would be impeded, and a mortal peripneumony would soon ensue. Indeed, such a danger is little to be apprehended from the use of astringents, because they cannot be applied immediately to the lungs; but after being swallowed, they must be taken in by the absorbent vessels of the stomach and intestines, and thus come slowly only, and much diluted, to the part affected: but then on the other hand, it is easy to perceive, that very inconsiderable effects are to be expected from their astringent and inspissating qualities; for they act first, with their whole force on the primæ viæ; wherefore, if they be very powerful, they will, by causing the mouths of the absorbents in the intestines to contract, stop up the passage against their own entrance into the blood, until, either by fluids taken as common drink, or by the humours perpetually flowing to the stomach and intestines, they are so diluted as to be no longer able to contract the tender and narrow orifices of the veins, whose mouths open into the intestines; and thus they may gain admittance, as it were, by stealth, and greatly weakened and diluted, into the blood. On this account, physicians do not trust much to astringents, although they



they prescribe them, that they may not appear to neglect any thing that can possibly be of the least service to the patient; and as the prudent use of them is very innocent and safe, for if they do little good in this disorder, they will not do much harm, as the principal bad effect of strong astringents is to be feared in the primæ viæ; wherefore wise physicians are used to order such remedies in a small dose, frequently repeated, when the symptoms indicate the use of them; and physicians generally prescribe the more gentle kind of astringents, such as the bole armoniac, terra sigillata, blood-stone, and the like<sup>z</sup>: and in the *Materia Medica* of our author, under this aphorism, various formulæ of this kind are to be found.

*Alexander Trallian* seems to hope much good from the use of the blood-stone being ground to a very fine powder, of which he gave 4 scruples, and continued the use of it, as it seems, for a long time; for he tells us, that one of his patients, at last, grew tired of taking it, upon which he tied the powder in a linen rag, and steeped it in a sweet-scented wine, and afterwards gave the patient the wine with good success, as the whole body was strengthened by it; he adds, *quod jam morbo liberatus, idem præservationis causâ facere pergebat bibebatque, donec etiam corpore probe refecto consueta agendo viribus se constare sentiret*; “that after the patient had recovered from his disorder, he continued the use of this wine, till he found his strength was so far restored, as that he was capable of doing all his usual business.” Now we know that the blood-stone is the pure ore of iron, which, therefore, when steeped in wine, possesses all the corroborating qualities of steel, by which the weak solids are rendered firm, and the too much dissolved and attenuated fluids are condensed, as was said §. 28. Above, (§. 1198.) among the pre-disposing causes of an hæmoptysis and phthisis, was reckoned that state of the body in which the vessels are weak, and the blood dissolved and thin. For a

<sup>z</sup> Alex. Trallian. Lib. VII. Cap. 1. pag. 300, & seq.

like reason, it should seem, that *Morton*<sup>a</sup> commends the bark ; for although he says, *quod præsentem hæmoptoen cito tuto sistit, futuramque etiam prævenit* ; “ that “ it soon safely stops the hæmoptysis when present, “ and prevents it when it is apprehended :” yet he appears to have expected more from the corroborating quality of this medicine, for the prevention of an hæmoptysis, than for the immediate stopping this discharge when it is begun ; as it is plain from what he says in the rest of the chapter, and the cases of patients annexed to it : and at the same time he observes, that by the use of this remedy, the body is gradually restored to a robust and athletic state. *Brunner*<sup>b</sup> confesses he did not believe what *Morton* had said of the efficacy of the bark in an hæmoptysis, till he found the truth of it by experience ; and particularly in a thin man, subject to a bleeding at the nose, and afterwards troubled with a spitting of blood ; at first, only in spring and autumn ; but in time, the returns of the complaint grew so frequent, that he was scarce ever free for a day together from spitting of blood, and his body was beginning to waste ; various remedies, and among the rest, goats milk, having been used without success, he gave him the bark ; the hæmoptysis stopt in a few days, and the man recovered his health : and he says, he afterwards found the bark equally successful in a bleeding at the nose.

But it is sufficiently evident, that such an efficacy of the bark is not meant in these instances, as that it instantly should stop the blood rushing from a broken vessel of the lungs in a full stream ; but rather that virtue of this medicine, by which it corrects the disposition of the body, both in the solids and fluids, which renders men liable to an hæmoptysis, of which we treated §. 1198. But the enquiry now properly is, what remedy our art knows, by the use of which,

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<sup>a</sup> Phthisiolog. Lib. III. Cap. v. pag. 96.  
Cap. v. pag. 101.

<sup>b</sup> Glandul. Duod.



we may hope presently to stop a profuse spitting of blood, for as to a slight hæmoptysis, that generally yields to bleeding, accompanied with rest of body and mind; and it but seldom happens that persons die by the violence of this complaint, for it much oftener turns to a consumption, which brings on death by slow degrees; but as it sometimes happens that men are in instant danger of losing their life by a profuse spitting of blood, it will be worth while to see what art has attempted in such a case.

*Celsus*<sup>c</sup> tells us, that *Erasistratus* used to bind the legs, thighs, and arms, in several places; by this means the veins being compressed, a considerable part of the blood is retained in the limbs, and a less quantity returns to the heart, and thus time is given for the broken vessel gradually to contract itself; and although *Asclepiades* disapproved these ligatures of the limbs as hurtful, yet he adds, but experience shews that they often answer the intention.

*Bennet*<sup>d</sup> however, a writer of great authority on this disease, says, *partes extremæ sanguinem extussentibus ut & narium hæmorrhagiâ detentorum, sæpe incassum ligatæ fuere; ejus tamen motum fricando, blandoque adhibitio calore in exterioribus suscitasse proficuum fere semper invenimus*; “binding the extremities in a spitting of blood, or in an hæmorrhage from the nose, is often unsuccessful; but we have almost always found, adds he, that exciting the motion of the blood in the external parts by friction and moderate warmth, has been of service;” of this we made mention also in the preceding paragraph. Some physicians seem also to have thought of applying styptics to the ruptured vessel itself, but as this can only be done by steams, and the virtues of astringents are of a more fixed nature, little can be hoped from this. Spirits of wine, as it is well known, are accounted styptic, and with reason; and at the same time they retain this quality, even when dissolved into

<sup>c</sup> Lib. IV. Cap. iv. pag. 204.

<sup>d</sup> Tabid. Theatr. pag. 71.

into steams; but such a hot and acrid steam would very much irritate the internal surface of the lungs, and produce a violent cough, which is very dangerous in this complaint. Balsam of *Tolu*, conveyed to the lungs by smoaking, is recommended by Dr. *Mead*<sup>e</sup> for a spitting of blood; but there seems to be danger of exciting a cough by this means. *Bennet*<sup>f</sup> recommends fumigations, but not for stopping the hæmoptysis, but rather for cleansing the ulcer in the lungs; for he adds expressly, *suffitus non statim ab eroso vasculo aut visceris parenchymate submoveantur, sed post dies quatuordecim imprimis a sedatâ hæmoptysi*; “fumigations should not be applied immediately on an erosion of the vessels, or of the substance of the lungs, but about a fortnight after the spitting of blood has ceased.”

When we treated of the delirium of a fever, as also in the chapter of the epilepsy, it was shewn, that the cause which disturbs the operation of the brain, may reside in distant parts of the body sometimes, and that remedies may very successfully be applied to those places where the root and origin of the evil exists; on this account, practitioners have thought that a spitting of blood might be stopped, although the remedy was not applied to the lungs, but to some other part of the body: there is a very remarkable passage in *Hoffman*<sup>g</sup>, and to this purpose; *mirabile est forte astringens assumptum mox & celerrimè in dissitas etiam partes operari easque constringendo nimias excretiones cohibere. Ita vidimus in hæmoptysi vel immodico mensium profluvio, ab usu tincturæ sulphuris, vitrioli vel hæmatitis brevi post sanguinis eruptionem conquievissè*; “it is wonderful, that a strong astringent being taken inwardly, very speedily operates on distant parts, and by contracting them, puts a stop to profuse evacuations; thus we see in an hæmoptysis,

<sup>e</sup> Monit & Præcept. Med. pag. 53.  
pag. 126.

<sup>f</sup> Tabid. Theatr.  
<sup>g</sup> Pathol. Gener. Part. III. Cap. vi. §. 11.  
Tom. II. pag. 416.



hæmoptysis, or in an immoderate flux of the menses, that the effusion of blood has stopped soon after taking tincture of sulphur, of vitriol, or of lapis hæmatitis." I have seen a violent bleeding at the nose presently stopt, by applying a linen, four times doubled, wet with cold wine and water, to the crotum; presently after the patient had a shivering all over, and the bleeding stopped: these instances seem to make it not improbable, that a spitting of blood from the lungs may be diminished, or even stopped, by applying remedies to other parts of the body; but we have not yet learnt by certain experiments what are these parts of the body, to which these remedies must be applied: and it is easy to foresee, how difficult it must be to give immediate relief, as the whole force of the neighbouring right ventricle of the heart, urges on the blood through the vessels of the lungs, and the torn vessel makes less resistance than the other branches of the pulmonary artery: besides, a man who spits up blood in a large quantity, is struck with a sudden fright, which makes the pulse grow quick and irregular, as *Galen*<sup>b</sup> observes, and therefore the motion of the heart is also accelerated. Physicians have remarked, that styptics succeed better when experiments are tried on brutes than in men, because brutes are ignorant of the danger, whereas wounded men are alarmed and disturbed; but if this perturbation be quieted by an opiate, the same effects are often found from styptics in men as in brutes<sup>c</sup>.

In urgent cases, physicians have sometimes ventured to try another method, which, at first sight, seemed very hazardous to many persons, but however, it has sometimes proved successful; they gave the patient cold water to drink, when they apprehended present death from a violent spitting of blood.

There

<sup>b</sup> De Puls. ad Tyron. Cap. xii. Charter. Tom. VIII. pag. 8.  
<sup>c</sup> Schweneke Hæmatolog. pag. 37, 38.

There is a remarkable passage in *Galen*<sup>k</sup>, where, after he has treated of common hæmorrhages, he turns his discourse to such as arise in the cavities of the body; these are his words, *qui igitur e vasis profluit sanguis aut quod amplius non confluet sistetur, aut quod occlusa divisio erit, aut etiam propter utrumque simul, quod puto optimum est. Porro confluere prohibetur & propter animi deliquium & revulsionem, & derivatorem, & refrigerationem cum corporis totius tum præcipue ipsius partis vulneratæ. Hæc enim ratione etiam frigida pota sæpe hæmorrhagias suppressit, idem facit & frigida foris effusa, &c.* “The blood flowing from  
 “ vessels may be stopped, either because fresh blood  
 “ does not flow to the part, or because the hiatus is  
 “ closed, or for both reasons, which is best of all;  
 “ wherefore a bleeding may cease, either from a  
 “ fainting fit, or by revulsion, or derivation, or re-  
 “ frigeration, either of the whole body, or particu-  
 “ larly of the wounded part; it is thus that drink-  
 “ ing cold water often suppresses hæmorrhages, and  
 “ the same effect is produced by throwing cold  
 “ water on the body.” And it appears from the following chapter<sup>l</sup>, that this use of cold water was customary among physicians for stopping hæmorrhages, although *Galen* does not at all approve of it; but as to those astringents, or such things as act only by cold, without being astringent, and which are applied immediately to the part affected, his words are, *at vero quæ extrinsecus parti sanguinem profundenti admoventur, tum adstringentia, tum citra astrictionem simpliciter frigida, hæc ipse (veluti plerique medicorum) non ubique probo sed mihi contra omnino, quam fieri res postulat sanguinem intro impellere & venas quæ in alto sunt implere videntur. Vidimus enim quosdam eorum qui ex pulmonibus sanguinem rejicerent, ex thorace refrigerato manifeste læsos, &c.* “I do not (as most physi-  
 “ cians

<sup>k</sup> Method. Medend. Lib. V. Cap. v. Charter. Tom. X. pag. 3.  
<sup>l</sup> Method. Medend. Lib. V. Cap. vi. Charter. Tom. X. pag. 112.



cians do) approve of them always; such applications seem to me contrary to what the case requires, to drive the blood inwards, and to fill the vessels which lie deep in the body; for we have seen many of those who spit up blood from the lungs, much hurt by the thorax being affected with cold."

*Hippocrates*<sup>m</sup> seems to commend cold, when he says, *at in his frigido uti oportet unde sanguis profluit aut profluxurus est, non supra ipsas partes, sed circa ipsas unde profluit, &c.* "Cold things may be of use when blood is spit up, or when this is expected, not applied to the parts themselves, but only near the parts from whence the blood issues:" and certainly, if we consider what was said (§. 881.) concerning the drinking cold liquors hastily, and in large quantities, when the body is heated, as being a frequent and dangerous cause of the pleurisy, it will appear that drinking cold water may be of use in an hæmoptysis, according to this aphorism; for the cold is not applied immediately to the lungs, from the vessels of which the blood flows, but rather to those parts from whence the blood passes into the lungs; for the stomach, which receives the cold liquor, touches the tendinous part of the diaphragm, which is so near the heart, the ascending trunk of the vena cava, and the right ventricle of the heart: now the blood contained in the vena cava and right ventricle, is soon after to be propelled into the lungs, and if it can be condensed by the cold of the water poured into the stomach, it will less easily pass through the wounded vessel, and there may be hopes that a clot of grumous blood may be formed, which will stop the hiatus of the vessel; and thus a dangerous hæmoptysis may be checked, and time may be given for healing the wounded vessel, if at the same time other necessary cautions be observed, part of which have been already, and part will soon be mentioned. It is true indeed, that there may seem room to apprehend

hend, that the same coagulation may take place in other vessels of the lungs: but the very action of the vessels may overcome this condensation caused by cold, as it is not of long standing; and yet some effect may be expected in the wounded vessel, as in that part the vessel has no action; and the danger lest the blood congealed by cold should suddenly stop in the narrow extremities of the pulmonary artery, seems to be diminished by this consideration, that the cold water is not suddenly thrown in large quantities into a robust body heated with fatigue, but into a body already weak with great loss of blood; and in which the vessels are soft, and the blood mostly dissolved and thin, as was noted §. 1198. It must be confessed, however, that *Hippocrates*, in the next aphorism<sup>n</sup>, condemns cold things, such as snow and ice, as being adverse to the breast, exciting a cough, promoting hæmorrhages, and causing catarrhs. *Bennet's* observation agrees with this admonition of *Hippocrates*<sup>o</sup>, *in nivium & grandinum congelatione, cæloque pluvioso hæmoptoici magis tentantur*, “snow, hail, and rainy  
 “weather, are the most dangerous for persons sub-  
 “ject to an hæmoptysis.” But it is to be considered, that we are not speaking here of such things as may occasion an hæmoptysis, but of a remedy which may be able suddenly to stop a dangerous hæmoptysis, that time be gained for applying safer remedies; for no wise man will have too large a quantity of cold water in such a slight spitting of blood, as may be cured by other methods: but doubtful remedies may be tried in very dangerous cases; and the rule of *Hippocrates* is good, that extreme disorders require extreme remedies.

But although it be the part of a prudent physician to weigh very carefully whatever is proposed to be done in the cure of diseases, yet the doctrine of the *juvantia* and *lædientia* has great weight in practice, and is of more force than all arguments drawn (ac-  
 cording

<sup>n</sup> Ibidem. pag. 209.

<sup>o</sup> Tabid. Théatr. pag. 109.



According to the scholastic term) *a priori*. Hoffman<sup>p</sup>, treating of the hæmoptysis, confesses, that drinking cold water a little at a time, but so as to drink a considerable quantity of it every day, the body being well covered, has sometimes cured a dangerous flux of blood of this kind, especially when the body has much internal youthful heat; *quem potus frigidus reprimendo madorem tepidum in peripheria corporis eliciendo, partes simul sulphureas calidas sanguinis exæstuationem inducentes evehit*; “which heat the cold water, repressing and exciting a warm moisture on the surface of the body, carries off by sweat the hot sulphureous particles which caused the effervescence of the blood.”

On another occasion, (§. 1069.) speaking of the cure of a palsy, we observed, that on applying cold water, there arises a shivering and shaking all over the body, but that this is soon succeeded by a warmth over the whole surface of the body; and that if the patients go to bed immediately, a profuse sweat generally breaks out; and thus the perspiration being increased through the pores of the skin, the vital parts are relieved. Bennet endeavoured by friction of the external parts, to augment the motion of the fluids in the cutaneous vessels, with a view to stop an hæmoptysis: but friction, when long continued, increases the motion of the blood all over the body, which does not seem expedient in this disorder. This author indeed<sup>a</sup>, condemns cold applications, if (says he) *frigido lavacro immergatur hæmopticus, aut narium hæmorrhagia correptus & ex indemalum incrementum sumpsisse deprehendes, a calore vero superficie tenus vel extremorum intenso remedium*; “a person taken with a spitting of blood, or with a bleeding, be dipt in a cold bath, the bleeding will increase; but augmenting the heat on the surface, and in the extremities of the body, is of service:” but as it is known, that from the application of cold water both internally and externally, if the body be well

<sup>p</sup> Sect. I. de hæmorrhagiis Cap. II. Tom. IV. Part 2. pag. 38. Tabid. Theatr. pag. 71.

well covered, there will follow a warmth on the skin, and even sweating, it appears that what *Bennet* wanted to obtain for stopping an hæmoptysis, is procured by the use of cold water; and at the same time the ebullition of the blood (in the heat of youth especially) is cooled by it, as *Hoffman* observed.

Some celebrated physicians in *Italy*, have shewn the happy effect of cold water boldly given in the cure of an hæmoptysis. *Martin Ghisi*<sup>r</sup>, who practises with great success at *Cremona*, among other very useful observations relates, that while he attended on a patient who had this complaint in the hospital, and who was a very robust man, the patient suddenly threw up three pints of blood: the doctor immediately gave him water rendered extremely cold by ice, with so good an effect, that the spitting of blood almost immediately stopt entirely, and the patient kept well for three days, when the hæmoptysis coming on again violently, he was suffocated in a moment before any succour could be given him: thus suffering for his folly, in that being forgetful in how great danger he had been, he had drank a considerable quantity of strong wine, and eat largely of roast meat, which his wife imprudently had brought him privily. Another case he mentions is of a youth, who had a frequent spitting of blood and a violent fever; after trying repeated copious bleedings, and other remedies without success, he gave him water made extremely cold by ice, ordering him to take a cup of it every quarter of an hour at least: in a few hours the spitting of blood ceased, the fever and cough abated, and in a few days he entirely recovered, and continues in good health, as the doctor declares.

After this, *Ignatius Gervascus a Monte Falisco*<sup>s</sup>, a celebrated physician at *Rome*, confirms this method by several cures; he not only gave the patients cold

water

<sup>r</sup> Lettere Mediche in 4to, Cremon. 1749. pag. 22, & seq.  
<sup>s</sup> De usu aquæ frig. in hæmoptysi, &c. in 4to, Romæ 1756. pag. 78, & seq.



Sect. 1200. Of a PHTHISIS PULMONALIS. 81

water to drink, but when the case was urgent he applied sponges dipped in cold water to the naked breast, at the same time ordering a thin cool diet. Many histories of spittings of blood cured by this method are to be found in his treatise, and he declares he has seen many more such cures than he relates.

At the same time he forbade giving warm broth to the patients, for he had observed, that this increased the cough, and brought on again the hæmoptysis. *Trallian*<sup>t</sup> had before given this caution; *at neque sorbitiones neque aliorum ciborum quidpiam calidum efferre convenit, sed omnia potius sint temperata & ad frigidum declinantia.* “It is not expedient, (says he) to give  
“the patients warm drink or hot victuals, but all  
“they eat and drink should be temperate, or rather  
“inclining to cold.”

It will perhaps seem strange, that a cough should be relieved by cold things, as cold is enumerated among the causes of a cough by *Hippocrates*, and by almost all physicians; but such cases are to be found in medical history as prove this. A man was troubled for three months with a violent cough; after several remedies had been tried in vain, he fell by accident from a bridge on frozen water: he broke the ice by his fall, and was plunged up to the chin in the water; when he had got out and returned home, he put on a warm shirt, eat some warm broth, and slept quietly all night; the next morning he was surprised to find that his cough was almost gone, and in a few days after it entirely ceased. A celebrated physician<sup>u</sup> was afflicted with a dry cough, which continued very violent for sixty hours: having tried several remedies without success, he perceived the seat of the disorder was in the upper part of the aspera arteria, where he felt a troublesome pricking sensation, which made him think, that some small vessels being dilated, poured forth an acrid humour upon this part; he concluded from hence, that cold air

VOL. XII.

G

might

<sup>t</sup> Lib. VII. Cap. 1. pag. 290.

<sup>u</sup> Floyer, *ψυχρολογία*, p. 243.

might be serviceable, by contracting the mouths of these vessels : he therefore exposed himself to the cold air in *January*, at first cautiously ; but as he immediately found himself relieved, he continued to expose himself freely to the cold, and was cured <sup>w</sup>. When the nostrils begin to run in a coryza, the fluid which drops from them is frequently so sharp, as not only to inflame the alæ of the nose and the upper lip, but also sometimes to excoriate those parts so much, that the persons scarce dare to blow their nose for the pain. If any thing like this happen about the upper part of the aspera arteria, a very troublesome cough must necessarily be the consequence.

Astringent remedies are recommended in this disorder, or such things as are incrassating, and at the same time soften every kind of acrimony of the humours : sometimes remedies of both classes are combined, as may be seen in the passage quoted above from *Alexander Trallian*. Gum arabic, gum tragacanth, starch, the root, leaves and flowers of the greater comfrey ; among the astringents are the leaves, roots, and seeds of plantain, cinquefoil, pimpernell, tormentil, bistors, &c. which occur every where in the prescriptions of physicians. *Bennet* composed a medicine made chiefly of incrassating remedies, but with some astringents joined with them, and macerated by throwing quick-lime on them, and then pouring water over the whole of this composition : he gave six ounces every morning, for four or five days, to persons labouring under an hæmoptysis ; and he says, it scarce ever failed of success. Formerly, lime-water was accounted a doubtful and suspicious remedy ; but since it has been given in a considerable quantity, and for a long continuance, to persons afflicted with the stone, gravel, &c. no danger is feared from it.

But as perpetual experience has shewn, that native balsams are very useful in recent wounds, and may even be applied with success in ulcers, physicians prescribe

<sup>w</sup> Academ. Reg. Scient. 1737. Hist. pag. 66.



prescribe them also in this disease. Of these, the chief which are used internally, are pure turpentine, balsam copaiva, balsam of *Peru*, balsam of *Mecca*, and of *Tolu*; all these appear to diffuse their fragrance tolerably soon through the body, as the urine shews; which, in a few minutes after the taking, any of these balsams exhales a pleasant smell of violets: however, all these balsams leave a warm aromatic substance in them, for which reason they must be given but in small doses, else they will increase the heat and motion of the blood; for this reason, in that number of our author's *Materia Medica*, which answers to this head, only four grains are permitted to be taken every four hours of the mass of pills, which is composed of native turpentine reduced into a paste, with powder of liquorice root. But although the chymists so highly praise balsam of sulphur, which consisted of sulphur digested with express or distilled oils, physicians, with good reason, prefer native balsams for the cure of this disease: the use of native balsams seems to be of considerable antiquity, for they are mentioned by *Plautus*\*, as a common remedy well known to all: for when the servant says to the young man, *tua causa rupi ramices, jamdudum sputo sanguinem*; "I have broke a vein in your behalf, I spit blood already;" the youth answers, *resinam ex melle Ægyptiam vorato saluum feceris*; "take *Ægyptian* resin in honey, and you will recover:" now it is well known, that turpentine is often called resin. Various prescriptions are to be found under this head, in the *Materia Medica*.

3. The Institutes<sup>y</sup> in the chapter, which treat of the causes of diseases, explain what physicians mean by the six non-naturals; these are, 1. air, 2. food, 3. motion and rest, 4. the passions, 5. things retained and excreted, 6. sleep and waking; all these are to be directed by a skilful physician in such a manner, as

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not

\* Mercator, Act. I. Scen. 2.

<sup>y</sup> Boerhaav. Institut. med.

not to do hurt when this disease is actually present, and as much as possible, to be contrary to the causes of the disorder before enumerated. Too great heat or intense cold of the air, are equally prejudicial: hence the air should be kept in such a temperature, as is between each extreme; how this is to be effected was explained on another occasion, (§. 605.) Now as a feather-bed heats the body more than one that is not so soft, a matrafs is better for such patients; and they should be only moderately covered with bed-cloaths. Rest is absolutely necessary, lest the motion of the blood in the veins, being accelerated by the exercise of the muscles, the blood should circulate through the lungs with too great impetuosity, and in too great quantity, and the hæmoptysis renew its violence. It is very evident from hence, how dangerous a cough is for patients in this disorder; for if, as was said, §. 1198. so great a violence may be done to the lungs by a cough, as to burst a vessel, how much more is to be feared, that in a vessel already broken, the wound should be kept from closing again by this cause.

A cough therefore, is, by all means, to be appeased by a prudent use of anodynes; for the same reason, the patient should be warned not to talk much, or call very loud for any thing he wants; on which account, I have always advised, that a bell should be used for calling servants in these cases. Violent passions are altogether to be avoided, and if, by misfortune, they have been excited, to be prudently appeased, of which we treated, §. 104. But although it be very proper, that the patient should be chearful, yet care should be taken not to provoke him to laughter, by any ludicrous speeches; but as the rest of the body, which is so necessary in this case, and the use of anodynes, are apt to produce a costiveness, a soft oily clyster may be necessary, to give the patient easy stools; for if the fæces growing dry and hard, should require a considerable effort to ex-



pel them, this will be a strain upon the lungs, and there will be danger of a relapse. Long sleep should be indulged, that in that time of tranquillity and repose, the closing of the wound of the injured vessel may be promoted: care must be taken at the same time, that the body be well covered, and the perspiration kept up, during sleep.

The diet should be very mild and soft, and nothing be allowed, which is either acrid naturally, or easily acquires a considerable acrimony; wherefore the food should consist of such farinaceous substances as are not very tough; of soft ripe fruits well fermented; bread things made with milk, soft vegetables, weak broths well cleared of fat, and with rice boiled in them; and the taste of which will be agreeable, with little or no salt: broths made with barley, oats, &c. unless they be well seasoned with salt, are too insipid. I have known some persons who used to think, that the best way to heal up the broken vessel, was by giving the patient calves-foot jelly, &c. it is well known; that the feet, &c. of animals, boiled for a long time, yield a viscid kind of glue, which is used in some mechanic arts; for the tendons and the sockets of the joints abound with this viscid substance, so that water draws off a great quantity of it from them when they are boiled: but this will form a viscid tenacious chyle, which will rather oppress the weak lungs, than contribute to nourish the body; so that these jellies are with reason to be rejected in this disease, and more diluted broth to be preferred: but when the disease begins to grow better, something of white meat (fowls particularly) may be added to these, but sparingly; and such food is better to be given a little at a time and often, lest the lungs should be oppressed by plenty, even of good chyle, poured upon them all at once: for we see, even in healthy strong men, that after a copious meal all the vessels grow turgid, and at the same time, when plenty of new chyle mixes with the blood, the breathing becomes

somewhat more difficult than before, partly from this cause, and partly because the stomach being distended, makes the descent of the diaphragm, close to which it lies, more difficult; for a sudden repletion of the vessels in this case, even with good fluids, is to be feared; and also that the passage of these fluids through the lungs should be rendered more difficult: for which reason, *Hippocrates* says<sup>z</sup>, *his confert si circa exordia curandos susceperis, ut & manuum venæ sanguinem emittant, & victus ratione utatur ex quâ & siccissimus & maxime exsanguis evadat*: “it is of service to such persons, if you attend them in the beginning of the disease, to let them blood in the arm, and that their diet should be such as will render the body dry, and not over-filled with blood.” Perhaps it was for the same cause, that *Celsus*<sup>a</sup>, in treating of this disease, *sed sic bibendum est ut sciamus huic morbo sitim prodesse*; “but in the allowance of drink we are to remember, that thirst is serviceable in this disorder.”

However, if the drink be diluting and soft, and not given in large quantities at once, it should seem of service, as the blood, by this means, may be made fitter for an easy passage through the vessels; and this fluid may be forced by urinary passages, and the pores of the skin from that acrimony, which is often a cause of this disorder, as has been already observed. *Celsus*<sup>b</sup> briefly enumerates those things which are hurtful or serviceable in this disorder, in the following words; *præter hæc necessaria sunt quies, securitas, silentium, &c. at inimica sunt vinum, balneum, Venus in cibo oleum, acriora omnia, item calida fomenta, conclave calidum & inclusum, multa vestimenta corpori injecta etiam fricationes, nisi ubi bene sanguis conquierit*; “besides these, rest, tranquillity, and silence, are necessary, &c. but wine, bathing, venery, oil with the meat; all acrid things, also warm fomentations,

<sup>z</sup> De morb. Lib. I. Cap. vi. Charter. Tom. VII. pag. 538.  
<sup>a</sup> Lib. IV. Cap. iv. pag. 203. <sup>b</sup> Ibidem.



Sect. 1200. Of a PHTHISIS PULMONALIS. 87

“ons, a hot close room, many cloaths thrown on  
“the body, and frictions, (unless when the bleed-  
“ings have ceased) are prejudicial.”

For common drink, it will be proper to use new milk, diluted with equal parts of water, or barley water, in winter; and in summer, as then more liquor, and that more diluted is required, the drink may be two thirds water, or barley water, and one third only milk: but lest this drink should be apt to turn sour, or that the milk should form hard curds in the stomach, a little sugar, or *Venice* soap, may be put into these drinks, together with absorbents. A formula of this kind is to be found in the *Materia Medica*, under this head. *Hippocrates*<sup>c</sup> recommends the use of milk to consumptive persons, and such who are greatly emaciated; but he adds this caution, *non valde admodum febricitantibus*, “but not if they be very  
“feverish.” A slow fever, as we shall see hereafter, often accompanies this disorder; but milk is not therefore to be forbidden, but when the fever is very intense, then a more diluted liquor is necessary, which may be made by adding water, or decoction of barley, or oats, to milk, or even whey itself may be drank. How much *Trallian*<sup>d</sup> approved of milk, or of a diet consisting only of milk and various preparations of corn, appears from the following expressions of his; *Omnes autem lacte utantur mollique & recenti caseo præsertim caprillo aut bubulo, neque enim medicamentum aut cibus aut aliud quidpiam est adeo accommodum ipsis aut utile, atque lac, & qui per initia solo ipso constanter longiore tempore usi sunt; omnes in totum convaluerunt.* “Let all such persons use milk and soft  
“new cheese, of goat or cows milk; for there is no  
“remedy, or food, or any thing else so suitable to  
“them as milk: and they who began the use of it  
“early in the disorder, and continued it constantly  
“for a long time, (taking no other food) all reco-  
G 4 “vered.”

<sup>c</sup> Aphor. Sect. V. No 64. Charter. Tom. IX. pag. 237.

<sup>d</sup> Lib. VII. Cap. 1. pag. 304.

“vered.” He advises a milk diet to be long continued, and relates an instance of a patient being cured who spit pus, and was in imminent danger of a consumption, by abstaining a whole year from wine, and keeping constantly to a milk diet. The experience of all physicians confirms the great usefulness of a milk diet, so that it would be superfluous to use many arguments to prove what is so well known to all.

4. Above (§. 1198.) the causes both pre-disposing and procatactic were enumerated, to which we must always attend in the cure of this disease; as it is not only requisite that the hæmoptysis should be removed, but that its return, which is frequent in this disorder, should be prevented: the procatactic causes may be avoided by a careful regimen, but more difficulty seems to attend the correcting the pre-disposing causes: thus for instance, an hereditary disposition to this disease cannot be removed by art, and it is difficult to correct those causes which are mentioned §. 1198. Nor can this ever be effected speedily, but if ever it be done it must be by slow degrees; as to the weakness of the vessels, that indeed age will alter for the better, as the solids gradually acquire more firmness; and it is well known of how great service exercise then is, concerning which we refer to §. 28. An acrid disposition of the blood may be corrected by softening food, and remedies opposite to that particular acrimony which is discovered in it; or the acrid humours may be driven by art to other parts of the body, and thence discharged, of which we shall speak presently. But who can hope to alter the flatness and straitness of the chest, depressed shoulders, and a long neck, which are enumerated (§. 1193.) among the prognostics of an hæmoptysis and phthisis. However, some service has been done by prudent management even in these cases, as *Bennet*<sup>e</sup> attests, whose authority is deservedly

<sup>e</sup> Tabid. Theatr. pag. 112.



deservedly of great weight in every thing relating to this disease; his words are, *quibus ab usu remediorum aut plagarum mutationibus pectus angustum dilatatur gliscit corpus, robur augetur & color evadit floridior, salutis spes affulget denuo, per totum corpus relucente caloris vitalis ἐκλάμψει*; “ they who from the use of  
 “ remedies, or by travelling, have their chest,  
 “ which was too strait, enlarged, whose body is  
 “ grown, and their strength increased, and their  
 “ complexion more blooming, have a gleam of  
 “ hope of recovery, the vital warmth spreading its  
 “ glow all over the body.” And *Atticus*, as was  
 said §. 1198. by travelling into *Asia*, had his constitution greatly altered for the better in these respects.

Concerning that acrimony of the fluids which arises from diseases, we have treated in part already, and more will be said on this subject when we give the history of the small-pox.

It was before noted, §. 1198. that acrid humours flowing along with the blood have sometimes found a passage out of the body by various outlets, not only greatly to the relief of the patient, but sometimes to his entire recovery: these new discharges sometimes arise spontaneously, sometimes art successfully imitates these efforts of nature. The ancient physicians seem more frequently to have attempted this than the moderns; *Hippocrates*<sup>f</sup> says, *quumque ipse optimo corpore sese habere videbitur pectus & dorsum vicissim utrumque inurito. Ulceribus curatis per annum ebrietate abstineat, non impleatur supra modum neque manibus vehementer laboret, neque vehiculum conscendat, sed quam maxime crassum corpus ipse reddat*; “ that after a spitting of  
 “ blood, although no pus followed, and though  
 “ the patient seem very well, there should be cauteries made in the breast and back by turns; and  
 “ when the sores from the cautery are cured, the  
 “ patient

<sup>f</sup> De morbis Lib. II. Cap. xxi. Charter. Tom. VII. pag. 572.

“ patient should abstain from intoxication for a  
 “ year, and should not overload himself with food,  
 “ nor work hard, nor ride in a carriage, but endea-  
 “ vour to make his body plump.” He commends  
 this practice of cauterizing the breast and the back  
 in other places<sup>g</sup>, after the body has been rendered  
 plump and fleshy, and by drinking plentifully of milk  
 diluted with water, and mixed with honey; for says  
 he, *si enim ustio bene successerit morbum effugiendi spes*  
*est*; “ if the cautery succeeds well there is hope the  
 “ patient will not relapse.” Trallian<sup>h</sup> relates, that  
 he advised a man who was subject to a defluxion on  
 the chest, and to a cough, to be burnt on the head  
 with a red hot iron; and the patient readily comply-  
 ing with this advice, he says, *mirum quomodo omnia*  
*simul cessaverint & copia quæ influebat humidi & tussis.*  
*In posterum vero æger a fluxionibus in thoracem liber &*  
*immunis permansit*; “ it was wonderful to observe  
 “ how the defluxion of the humour and the cough  
 “ ceased, and the patient remained free from de-  
 “ fluxions ever afterwards.” At this day we use  
 more gentle methods in our practice, whether we use  
 a better may be doubted.

As the suppression of customary discharges are  
 enumerated among the causes of an hæmoptysis, it is  
 sufficiently evident that these must be again promoted,  
 as was said before.

## S E C T. MCCI.

**W**HEN (§. 1200.) has once happened,  
 and has been stopt, bleeding should be  
 used every half year for some years, gradually  
 diminishing however the quantity of blood taken  
 away.

Although

<sup>g</sup> De intern. affect. Cap. i. & iii. Ibid. pag. 640, 641.  
<sup>h</sup> Lib. VII. Cap. i. pag. 303.



Although an hæmoptysis has been happily cured, so that no symptom of the disorder remains, but all the signs of a perfect cure, which Bennet<sup>i</sup> establishes to be as follows, *post sanguinis extravasationes libera respiratio tussis sedata, vires constantes, securitatis παύσις, & contra*; “after extravasations of blood, a free breathing, no cough, and recovered strength, are signs of safety; and the contrary of danger.” Yet, however, we ought not to be too secure, as this disorder has often been known to return, unless diligent caution be used. We shall see hereafter, Sect. 1207. and we have already taken notice, that an hæmoptysis occasioned by external violence, without any internal pre-disposing cause, is the least dangerous of any: yet Hippocrates<sup>k</sup> warns us that a relapse is to be feared even in this kind of the disorder. *Tempore quibus vena aliqua a vulneribus aut quibusdam laboribus aut exercitationibus, aut aliâ quâdam causâ rupta sauciatur, quum coaluerit & sana esse vena videbitur, iterum alio tempore rumpitur; iterumque rumpitur ex iisdem causis a quibus prius affecta erat. Quum vero iterum rupta est sanguinem effundit confestimque copiosum sanguinem, & crebro vomentes intereunt, aut subinde recentem sanguinem vomunt. Multum autem & crassum pus per totum diem spuentes, eodem aut consimile modo intereunt.* “Often when a vein has been broken by wounds, or violent efforts of labour, or too strong exercise, or any other cause, when it is closed again, and seems cured, it will break open again at another time; or it may be again broken by the same causes which first injured it; and when it is thus broken it throws out blood, and the patients die of a sudden and copious effusion of blood; or they spit out fresh blood from time to time, and throwing up much thick pus all day, die in the same or in a like manner, &c.” In another

<sup>i</sup> Tabid. Theatr. pag. 108.  
 Charter. Tom. VII. pag. 543.

<sup>k</sup> De Morbis, Lib. I. Cap. ix.

ther place<sup>1</sup> he makes the same observation, and adds several cautions, such as that they should not run swiftly against the wind, and should not ride either on horseback or in a chariot; should avoid shouting and passion, should abstain from acrid, salt, and fat things: and at the same time he warns us, that a relapse is worse than the first attack of the disease: the scar of the broken vessel is often weak, so as that even from a small increase of the quantity of the blood, or in its rarefaction, or the velocity of its motion, a second rupture of the vessel may be feared; and thus the spitting of blood may become habitual, although an ulcer of the lungs and phthisis may not immediately follow upon it. *Tulpius*<sup>m</sup> relates a case of a painter who spit blood for upwards of thirty years, who took, nevertheless, many journies, till at last, says he, *tam late dehisceret volatico homini vena ut ne salus quidem ipsa eum servasset*; “this restless man enlarged the hiatus of the vein so much, “that nothing could save him.” In another instance, a spitting of blood lasted twenty years before it turned to a consumption; but this was then so violent as to destroy the lungs entirely, and accompanied with such a stench, that the physician would not venture to open the body after his death. I have also not seldom seen such spittings of blood as have lasted a long time; but in all these cases, after a miserable life, either a sudden death from a violent discharge of blood has followed, or an incurable consumption. A very worthy *French* ecclesiastic, who had laboured under an hæmoptysis eleven years, had so great a weakness in his lungs, that if he attempted to read, even without moving his lips, he felt a pain in the breast, and unless he left off immediately, a spitting of blood came on. Nay, the cicatrix of the broken vein often growing rough, produces an almost continual teasing cough; and sometimes the vessels near

to

<sup>1</sup> De intern. affect. Cap. I, II, III. Ibid. pag. 678, 641.  
<sup>2</sup> Lib. II. Cap. II.



to such a rough cicatrix, which is not yet quite firm,  
 being distended by an increased quantity or impetuo-  
 sity of the blood, press upon the scar, and produce a  
 like inclination to coughing, which endangers a new  
 rupture of the vessel. There is a remarkable passage  
 in *Hippocrates* <sup>n</sup> which confirms this opinion; for  
 after he had spoke of an hæmoptysis occasioned by a  
 vein being broken from hard labour, he adds what  
 follows; *at si vena quidem non omnino rupta fuerit sed*  
*tantum tractus in ipsâ fiat: fit autem præcipue velut*  
*varix, quod etiam confestim ubi factum fuerit, dolorem*  
*quemdam tenuem, & tussim siccam exhibet. Si vero diu-*  
*tius morata & neglecta fuerit, primum quidem paucum*  
*& subatrum sanguinem dimittit, mox etiam copiosorem*  
*& maxime sincerum, deinde etiam pus;* “ but even if  
 “ the vein be not quite broken, but only strained,  
 “ and there be a varicose swelling upon it, when this  
 “ happens it occasions a slight pain, and a dry  
 “ cough; but if it have lasted long and been ne-  
 “ glected, there follows first, a discharge of a small  
 “ quantity of blackish blood, afterwards more and  
 “ purer blood is effused, and at last pus also, &c.”  
 And he orders, that the patient should by bleeding  
 and diet be rendered in a manner bloodless, to the  
 end that the distended vessels may subside. *Quod si*  
*incipiente morbo curentur, rursus venulæ in loco ad latus*  
*subsident & humiles fiunt.* “ If they are taken care  
 “ of at the beginning of the disease, the veins sub-  
 “ side and become low.”

From all these observations, the usefulness of  
 bleeding to prevent the return of an hæmoptysis is  
 sufficiently evident; hence, by way of prevention,  
 blood should be taken twice a year from those who  
 seem quite recovered of this complaint, and that  
 about spring and autumn, chiefly at which seasons  
 the greatest changes are used to be observed in the  
 body; nay, I am accustomed to advise more fre-  
 quent

<sup>n</sup> De Morb. Lib. I. Cap. vi. Charter, Tom. VII. pag.  
 537, 538.

quent bleedings for the first two or three years, especially if the patients are in the vigour of their age and of a sanguine constitution: besides this, I always carefully watch whether there appear any such symptoms as appeared a little before the coming on of the hæmoptysis. Various such symptoms appear in various men. Thus Bennet<sup>o</sup> has remarked, *si post cruentas excretiones, sputum mucaginosum cæruleum & læve successerit & perseveraverit. Hæmoptysin in junioribus aut calidoribus recursuram denuntiat; si purulentum & in junioribus & ætate proVectis phthisim; si nullum cæteris paribus incolumitatem*; “ if after spitting of blood, there succeeds a spitting of a ropery, bluish, smooth matter, and this continues for some time, it denotes the return of the hæmoptysis in young persons, and in those of a warm constitution; if this matter be purulent, it foretells a phthisis both to young and old; if no matter at all be spit up, *cæteris paribus*, it prognosticates recovery.” It has happened to me to observe many other symptoms of a relapse in an hæmoptysis, which, whenever I perceive, I have always immediate recourse to bleeding: some persons feel a kind of oppression upon the breast; some find an increased heat in the thorax, with a slight dry cough; some have a strange unusual pulsation in the right, and some in the left flank, and seem to feel, as they say, the blood moving upwards from the flanks to the chest; and when this has happened several times, the spitting of blood returns, unless prevented by bleeding: hence it appears, that there can be no general rule by which to determine how often in a year the bleeding should be repeated, but this must be left to the judgment of the physician; however, less is to be feared from too frequent than from too seldom bleeding; for if the hæmoptysis return, large and copious bleedings may be necessary to stop it; whereas one moderate bleeding would have prevented



vented it. It was observed before, §. 106. that frequent bleedings dispose the body to a renewed plethora, and at the same time weaken the body; but this is a less evil than the danger of sudden death from a violent discharge of blood, or of a consumption following the hæmoptysis; for the bleedings are diminished gradually in frequency and quantity of blood let out, after no relapse has happened for three or four years, for then we may have good hope that the cicatrix of the broken vessel is firm; which, as the strength of the solids increases by age, will not afterwards be easily opened again; but it would be dangerous to leave off bleeding all at once, as was said before, §. 106. But unless the patient be complying, all the physician's care will be vain; and unless he will submit to a temperate regimen, and abstain from violent exercises, especially such as strain the lungs, so much as to bring on the hæmoptysis on a healthy body, which were enumerated §. 1198. Their situation is very unhappy, who cannot, or will not, abstain from such labours; and I have often lamented, that many died whom I had hopes of recovering, because they were obliged to gain their livelihood by playing on wind instruments, and by singing, or were greatly delighted with such occupations. *Moliere* acting for the fourth time the part of the *Malade Imaginaire*, persisted in it; though he felt himself disordered more than usual with an old complaint in his breast, continued playing his part, and scarce was he come off the stage when a violent vomiting of blood seized him, and he died. How greatly do pleaders strain their lungs who speak for hire: the satyrist *Juvenal*<sup>a</sup> has well described this.

*Ipsi magna sonant sed tunc cum creditor audit,  
Præcipue, vel si tetigit latus acrior illo;  
Qui venit ad dubium magno cum codice nomen,*

*Tunc*

*Tunc immensa cavi spirant mendacia folles,  
Conspuiturque sinus, &c.*

“ Talks loud enough in conscience for his fee,  
“ Takes care his client all his zeal may see ;  
“ Twitch’d by the sleeve, he mouths it more and  
more,  
“ ’Till with white froth his gown is flabber’d o’er ;  
“ Ask what he gains by all this lying prate ?  
“ A captain’s plunder trebles his estate.”

CHARLES DRYDEN.

Although not the liver, (according to his expression, *Rumpe miser tensum jecur*, “ and burst thy o’er-  
“ strained liver wretched man”) but some vessel in the lungs must have been burst in these speakers, and sometimes have occasioned their death.

## S E C T. MCCII.

**B**UT if on account of the violence of the disorder, (§. 1198.) styptics improperly applied, or the true method of cure (§. 1200.) being neglected, after the spitting of blood there comes on a difficulty of breathing continually increasing, a shivering in different parts of the body, a heat and redness of the cheeks, a dry cough, a hectic fever, increased thirst, debility, a sense of weight and oppression in the chest, these symptoms denote that the wound of the vessel from whence the discharge of blood arises, has changed the matter collected about its lips, and under the crust of the dried blood into pus ; that this collection is turning into a vomica, and that being broke into an open ulcer of the lungs.

The



The great hope of cure in this disease, is, as has been said, that the injured vessel in the lungs may be cured like a fresh wound, without suppuration, which has always justly been accounted dangerous. When the spitting of blood has been caused by an anastomosis of the vessels, there is the most reason to hope this, because the vessel is not damaged; and by the very loss of blood spit out, as well as by bleedings, the vessels being emptied, contract of their own accord. If a vessel be broke in the lungs by some violence, there remains great hopes of closing the hiatus, because it is a single wound; which, unless it be very large, may be healed without suppuration by due care: but when the vessels have been corroded by the acrimony of the fluids themselves, then certainly it will be very difficult to prevent a suppuration: for this is not a simple wound, and the inflammation which commonly arises about the lips of the wound, will not go off by being discussed, because to this a mild disposition of the fluids is necessary, see §. 386. Nor is it always in the power of art, in a few days to correct such an acrimony in the fluids, as was great enough to corrode the vessels themselves.

Another reason of apprehending a suppuration in consequence of an hæmoptysis, was, grumous blood left in the lungs after a spitting of blood; for while the hæmoptysis is diminished, and at least ceases, some part of the blood remains at the orifice of the injured vessel, and even in the bronchia themselves; but as such patients must be kept perfectly at rest, and breathe as gently as possible, such grumous particles of blood sometimes remain a considerable time; but when strong styptics have been applied, and especially if the hæmoptysis has been suppressed by drinking very cold water, as was said before, then there is reason to suspect, that large clots of such grumous blood have been formed, and adhere to these parts. But before (§. 172.) we took notice, that *Hippocrates* had said, *si in ventrem sanguis effusus fuerit præter*

98      Of a PHTHISIS PULMONALIS. Sect. 1202.  
*naturam, necesse est suppurari*; “ if the blood is pre-  
 “ ternaturally effused into the belly, pus will ne-  
 “ cessarily be found.” But *Galen*, in his commen-  
 taries on this aphorism, has well observed, that *Hip-  
 pocrates* does not there speak of the effusion of blood  
 into the belly, properly so called, but into any other  
 cavity: at the same time he adds, that by suppura-  
 tion here is understood every kind of corruption of  
 the blood, not only a conversion of it into pus, pro-  
 perly so called, but the blood in a warm moist place,  
 if at the same time the air have access to it, it soon  
 grows putrid; and thus may, from its acrimony, cor-  
 rode the neighbouring vessels, and thus augment all  
 the complaints, and bring on a suppuration. The  
 ancient physicians certainly seem to have feared this  
 bad consequence from grumous blood left after an  
 hæmoptysis, and therefore they were solicitous that  
 it should be evacuated as soon as possible. *Galen*<sup>9</sup>,  
 in the cure of a violent hæmoptysis, after ordering  
 the patient to breathe gently, and to be silent; and  
 after he had ordered bleeding, &c. says, *ubi hæc sunt  
 facta primum posca tum diluta tum tepida potui est offe-  
 rendæ; quo si quis in viscere thrombus latitet resolutus  
 extussatur* (ἐκἐγχυθῆν) *atque hoc nihil vetat bis terve ter-  
 nis horis facere*; “ when these things have been done,  
 “ a thin warm posset is to be drank, by which, if  
 “ any clot of blood remains in the lungs, it may be  
 “ dissolved and coughed out, (ἐκἐγχυθῆν) and there is  
 “ no reason why this should not be repeated every  
 “ three hours, for two or three times.” *Trallian*<sup>r</sup>  
 speaks in the like manner, thinking, that not only  
 the grumous blood is dissolved by this means, but  
 that also a further effusion of blood may be hin-  
 dered by vinegar, to which the old physicians ascribed  
 an astringent quality. Certainly, *Bennet*<sup>s</sup> also seems  
 to fear a phthisis may be produced from grumous  
 blood long retained in the lungs; for thus he ex-  
 presses

<sup>9</sup> Method. Med. Lib. V. Cap. VIII. Charter. Tom. X. p. 115.  
<sup>r</sup> Lib. VII. Cap. 1. pag. 389.      <sup>s</sup> Tabid. Theatr. pag. 108.



presses himself, *si peractis sanguinis excreationibus pulmo minus sensibilis, aut pectoralia torpida, sanguinis reliquias per ἀνακαθάριον non apprime repurgaverint, retenti sanguinis & ipsius pulmonis computrescentia suborta phthi- in subsequatur* minatur; “if after the spitting of blood is over, on account of the lungs not being of very acute sensibility, or the pectoral muscles not exerting themselves, the remains of blood have not been thoroughly cleared away, there is danger that a phthisis should follow from the retained blood growing putrid, or the lungs themselves suppurating.” It cannot be denied, that we should be solicitous for the removal of this grumous blood; but at the same time all possible caution must be used, lest by exciting a violent cough, the hæmoptysis, which had been stopped, should return, which is always dangerous. Before, (§. 857.) when we treated of accelerating the breaking of the vomica of the lungs, it was said, that the steams of vinegar or of hot wine, raised a cough, by which the lungs being agitated, the abscess often bursts on this account. I own, I never ventured to advise persons troubled with an hæmoptysis to take a posset, and I have oftener advised it three hours after the hæmoptysis was stopped: it is true indeed, that the old physicians did not give oxycrate or posset hot, only luke-warm, which irritates less indeed, but still it irritates; nor can this grumous blood be presently thrown out but by a cough, which will always be safer afterwards, when the broken vessel has already contracted itself spontaneously, and there is already a beginning of a consolidation: besides, it is to be noted, that a clot of grumous blood, stopping in some branch of the aspera arteria, often is continuous with the grumous particle which stops up the wounded vessel; and therefore, if such a clot of blood be brought away, the other must also come away with it, which stopped up the wounded vessel, and the hæmoptysis will come on again to the danger of the patient; which, even

if we should again succeed in stopping, it may leave grumous blood again to be removed. I have sometimes seen, that after a day or two, these grumous clots came away of their own accord with a slight cough: for, in a warm moist place, the grumous blood gradually begins, as it were, to liquify; and the adhesion of the clots of blood to the sides of the bronchia is diminished, or quite removed, and thus they are easily spit out: if after two days no grumous blood came away, and the patients, as often is the case, felt something of a troublesome weight and oppression in the breast, I advised them to draw in with the breath the steam of warm water, and this generally brought the grumous blood away without mischief; nor have I observed any harm to follow from this delay: but although *Bennet*<sup>1</sup> fears a phthisis from the retention of grumous blood, yet he says soon after, *sanguine extravasato putrescente bronchia minus infarciuntur, a succo nutritio magis, cum in mucaginosam excoquitur substantiam*; “the bronchia are less obstructed by grumous blood growing putrid, than by the nutritious juices, when it is concocted into a mucilaginous substance, &c.” We mentioned this passage on another occasion, §. 1198. It is certain, that when the extravasated blood begins to grow putrid, it liquifies, and by that means is more easily spit out.

Besides, from what has been mentioned §. 1199. it appears, that the grumous blood collected in the air-vessels of the lungs, does not always grow putrid, but is sometimes formed into polypose concretions, which, when thrown out by coughing, has the form of the vessels and of their ramifications; and indeed, it seems probable enough, that blood concreting on, is generally thrown out from thence before it grows putrid; or if it remain there long, it will be more likely to turn to a polypose substance: and it was also observed §. 1199. that a cellular membrane runs every

<sup>1</sup> Tabid. Theatr. pag. 109.



Sect. 1202. Of a PHTHISIS PULMONALIS. 101

every where between the bronchia, through which membrane innumerable vessels are distributed; if they should be burst, would pour forth the blood into the cells of this membrane, which coagulating and adhering to the outside of the air-vessels, might be able, by long stay, to corrode and inflame the lungs, especially if these vessels had been eroded by an acrimony of the fluids contained in them: but if the larger vessels should be corroded by such a cause, so as to bring on a violent hæmoptysis, the same evil might be feared from a cough, excited with the intention of throwing off these grumous concretions; and such a putrescence of the grumous blood, as that of which we have just been speaking, is prior to a copious hæmoptysis not consequent upon it. From all these things, it appears to me a dangerous experiment to attempt the expulsion of the grumous blood from the lungs, by methods which excite a cough, presently after the hæmoptysis is stopped.

The signs of an abscess being formed in the lungs after an hæmoptysis, were treated of §. 834, 835. when we discoursed concerning the vomica of the lungs following a peripneumony, for all the symptoms are the same here; for suppuration does not follow a spitting of blood, unless an inflammation come on upon the wounded part of the vessel so violent, as not to admit of resolution; and hence, as has been said before, physicians have always been very anxious to prevent an inflammation: it is true indeed, that a larger vomica generally follows a peripneumony, than after an hæmoptysis: but this tendency to suppuration once begun, gradually extends and preys on this viscus, unless the ulcer can be soon cleansed and the wound consolidated; but as this evil is slight in its beginning, the physician should be very careful not to be deceived in this prognostic; and not to let the patient, from too great security, neglect a proper regimen, where we should carefully attend to the

symptoms here enumerated. This *Fernelius* <sup>u</sup> judiciously remarks, when he treats of the vomica of the lungs; *latens profecto & imprimis abditum vitium sæpe nec laboranti nec medico notum, quo laborans ipse nec consueta munia intermittit, nec se morbo teneri putat causamque interitus sui nesciens intus gerit sub pectore*; “this (says he) is a very obscure and concealed disorder, and often not apparent, either to the patient or the physician; so that the patient neither alters his course of living, nor thinks himself ill, but bears about unknowingly in his breast the seeds of death.” He remarks also, that some have died unexpectedly, by the sudden breaking of such a vomica; and this happened in particular to two famous physicians, who, notwithstanding their skill, found no symptoms beforehand of their approaching fate; *attamen nec febre nec inappetentiâ, nec alio ullo symptomate impendentem sibi diem supremum præsenſerant*; “neither fever, or loss of appetite, or any other complaint, forewarned them of it:” however, they do not seem to have been deceived, because there were no signs of the hidden evil, but because they did not attend to them, as *Fernelius* <sup>w</sup> owns: for he says, *omnibus tamen sic affectis multo tempore antequam vomica rumperetur, cruenta exſcreatio proceſſit ex pulmone eaque cum tussi: adſuit que ſpiritu gravis & fætidus, corporis gravitus pectoris que levis oppreſſio ſpiritus difficultas*; “all persons in this disorder, some days before the vomica breaks, have a spitting of blood with a cough; and the breath is offensive and fœtid; there is a heaviness of the body, a slight oppression of the breast, and a difficulty of breathing.” Certainly, the spitting of blood might have made these physicians aware, that there was reason to apprehend a vomica; and the symptoms just mentioned, shewed sufficiently that it was actually formed; such mistakes are not to be charged on art, but on the artists, not sufficiently attentive to what passes in

<sup>u</sup> Patholog. Lib. V. Cap. x. pag. 109.<sup>w</sup> Ibidem.



in the disorder. Perhaps that physician might sooner be excused for his mistake, who, seeing a patient spit up blood with a cough, thought that after his death (which happened soon after) he should find an abscess in the lungs; whereas, on dissecting the body, the lungs were found quite sound, but the maxillary, frontal, and sphænodal sinusses were quite full of pus<sup>x</sup>. It appears, indeed, from the history of the disease, that this patient had a violent head-ach, with a fever, and the disorder killed him soon; which symptoms do not agree with a vomica of the lungs; and it is very likely that pus was discharged from the nose of this patient, as all these sinusses have issues into the cavity of the nostrils, but that part of the pus which fell through the posterior foramina of the nostrils into the fauces, was discharged with the cough.

Hence we conceive why *Hippocrates*<sup>y</sup> said, *quibus sanis horrores crebri sunt, ii ex sanguinis profluvio purulenti fiunt*; “in them who feel shiverings in health;” “a suppuration is about to succeed an hæmoptysis:” he says in health, not that such men can be strictly called healthy, but because they seem such to themselves, and to other unskilful persons. He adds, in the next aphorism<sup>z</sup>, *horror & spirandi difficultas in doloribus tabis signa sunt*; “a shivering and difficulty of breathing, with pain, are signs of a phthisis.”

When the physician attends to all these symptoms appearing after an hæmoptysis, he will not easily be deceived; but we are to note, that they do not all appear at first, but succeed each other; generally a sensation of oppression in the breast, and an obtuse pain with vague shiverings, are the first in order; then the other symptoms follow, in the order in which they are here ranged: but all these symptoms are slighter, or more grievous, as the disease makes a slower or a

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quicker

<sup>x</sup> Académ. des Sciences, 1735. Hist. pag. 25.  
Prænotiones. N<sup>o</sup> 16. Charact. Tom. VIII. pag. 854.  
Ibidem.

<sup>y</sup> Coac.

<sup>z</sup> N<sup>o</sup> 18.

104 Of a PHTHISIS PULMONALIS. Sect. 1203.  
quicker progress; as the vomica in the lungs is larger or smaller, and the humours being mild or acrid, will likewise occasion a difference herein; however, a phthisis arising from an hæmoptysis, generally preys slowly on the body, as will be observed hereafter, and therefore is justly to be reckoned among chronical diseases.

### S E C T. MCCIII.

**T**HIS collection of pus arises not only from the causes mentioned, (§. 1198.) but also from any peripneumony terminating in an abscess; (§. 832. to §. 843. §. 867.) this is to be known by the same symptoms (§. 832. to §. 843. §. 867.)

Hitherto we have explained how, and from what causes an hæmoptysis, and after an hæmoptysis, an ulcer in the lungs, arises; by which the whole habit of body wastes away, and then a phthisis pulmonalis is said to take place (§. 1196.); but a vomica of the lungs arises also sometimes, from an inflammation of this viscus so violent as not to admit of resolution, even without an hæmoptysis having preceded; as was explained before, under the numbers cited in the text, where also are enumerated, those symptoms which shew that an inflammation of the lungs tends to suppuration; as also those appearances which shew that pus is already formed, and that it is inclosed in a bag, which disorder is then called a vomica; which pus, unless it can soon be expectorated by spitting, or be thrown by metastasis upon other parts of the body, and thus the lungs be freed from this load of purulent matter, a phthisis pulmonalis follows, and the former disease loses its name, as *Aretæus*<sup>a</sup> has well observed; for after he had said that the disease

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<sup>a</sup> De caus. & sign. morb. diuturn. Lib. I. Cap. viii. pag. 86.



is called a phthisis, when there is a spitting of pus after a long cough or an hæmoptysis, he adds, *si autem pectus vel latus suppuraverit & materia per pulmones traducatur purulenti vocantur: quod si & pulmo ab his exulceretur, erosus a præterlapso pure, non amplius suppuratio (εμπύη) sed (φθόν) corruptio sive phthisis appellatur*; “but if there be a suppuration in the breast or side, and the pus be drawn through the lungs, such patients are said to have an abscess; but if the lungs themselves be ulcerated, by being corroded from the pus passing by them, this is no longer called εμπύη, a suppuration, but φθόν, corruption, or phthisis;” and then he proceeds to describe the symptoms of a phthisis pulmonalis. His distinction is very just with regard to the passage of the pus, formed after a pleurisy, through the lungs, of which mention was made in the account of the pleurisy: this passage often happens without any great injury to the lungs; but when this pus is not soon discharged by a copious spitting, it begins to accumulate in the lungs, and becoming acrid by corroding this viscus, produces there an ulcer, and subsequent phthisis.

#### S E C T. MCCIV..

**A**L SO an empyema (§. 1185.) being formed, may corrode, dissolve, and consume the lungs; so as that the same disease will arise as if they were consumed by an ulcer originally formed in themselves, (§. 1188. 4.) this is to be known by the symptoms there laid down.

A collection of pus between the lungs and the pleura, in the cavity of the thorax, is called an empyema; but it appears from what has been said before, under the numbers quoted here in the text, that in this

this case, the lungs will be corroded and consumed, by the pus collected so near to them, unless an outlet can be procured to discharge the empyema, before the lungs are much injured.

But before, when we treated of the peripneumony, we shewed, that the pus collected in the lungs, was sometimes derived to other parts by metastasis, and the viscus by that means freed from the danger of suppuration; but it has also happened, that the pus first formed in other parts of the body, has been re-absorbed into the blood, and falling suddenly on the lungs, has produced a vomica, from whence all the above enumerated evils are to be feared; concerning which, see what has been observed, §. 406. of the re-absorption of pus remaining too long in a close vomica.

Every disease, therefore, which is capable of producing an ulcer in the lungs, may terminate also in a phthisis.

## S E C T. MCCV.

**W**HENCE it is plain, what are the signs by which even a latent ulcer of the lungs may be known, what are its various causes, how many different species there are of it, and how many different kinds of phthisis.

When pus is spit out after an hæmoptysis, no one will doubt that the lungs are ulcerated; especially if new-matter be spit out every day, and the quantity is not diminished in a few days, nor does the spitting cease soon; for if, after the rupture of some large vessel, a violent hæmoptysis has ensued, it sometimes happens that the breach of the vessel cannot be closed, unless after a slight suppuration; as we see is the case in external wounds, in which the lips of the wound close under laudable pus, and the loss of substance



substance is repaired. The same thing sometimes happens after an hæmoptysis; but then the pus spit out is in small quantities only, and the spitting lasts but for a few days; the quantity spit out soon grows less and less, and at last the spitting entirely ceases, after the wound is closed; but if this suppuration lasts a long time, and the quantity of pus spit out increases every day, this is a sign not of a slight suppuration, which helps the healing of the wound, but rather denotes an ulcer of the lungs, extending itself more and more.

It is more difficult to know a concealed vomica, formed after an hæmoptysis, as this disorder usually begins without any grievous symptoms to the patient; so that being free from the spitting of blood, they think themselves quite well, and neglect the prudent counsels of physicians. But if we attend to what was said §. 1202. the physician will not easily be deceived in his diagnostics, if a vomica should follow an hæmoptysis.

The patient and the physician may be more easily deceived when, without any spitting of blood, without any considerable disorder having preceded, such a vomica is formed in the lungs, and gradually grows larger, till bursting of its own accord, it produces sudden death.

*Tulpius*<sup>b</sup> has observed, that this disorder was very common among the *Dutch*, either from a bad diet, or from the damp and foggy air; at the same time he tells us, that this disease is sometimes so concealed, *ut vix ulla sui proferat indicia præter tussiculam primum siccam sed mox humidam; aliquamdiu post trahitur difficulter spiritus, deficit anima & emarcescit paulatim corpus: licet interim nec pus nec sanguinem præ se ferant sputa;* “as scarce to give any tokens of its existence, “except a cough, dry at first, but soon after accompanied with spitting; sometime after there comes “on a difficulty of breathing, and faintings, and “the

“ the body gradually withers and decays, although  
 “ in the mean while the spittle has neither pus nor  
 “ blood in it.” But the vomica being burst, either  
 the patients are suddenly suffocated, the great quantity of pus instantaneously filling up the bronchia, or if they escape this immediate destruction, they die soon after, all their strength totally failing in a sudden fainting fit ; yet in such a case, the dry cough, the asthma, the decay of the body, would easily shew a prudent and skilful physician that there was a concealed disorder in the lungs.

A like disorder seems to have been much more difficult to discover in a magistrate, who, having a continual fever, on the bursting of a vomica in the thorax, *ut intra biduum ipsum occiderint, tum dolor eruptionem præcedens, tum pus eam insequens*, “ he died  
 “ in two days afterwards, overcome both by the  
 “ pain preceding the eruption, and by the load of  
 “ pus discharged from it afterwards :” and although the patient easily comprehended, that this unexpected discharge of matter had been collecting for a long time, yet he solemnly averred<sup>c</sup>, that he had not perceived any signs of this concealed vomica, not even a cough, or any other inconvenience, from this lodgment of matter in his breast ; however, it seems probable, that this patient feeling no disorder, had consulted no physician ; who, perhaps, would have discerned some symptom of this hidden evil. At the same time this may shew us, how diligent an attention is necessary to observe the diagnostics of such diseases ; for although no remedy could have saved the patient in this case, yet the reputation of the physician will always be in danger, if he be thought ignorant of any concealed disease ; it is however to be owned, that in such a case, if ever the error of the physician would be excusable, if he, when he was called to a patient with whom he was quite unacquainted, finding him in a continual fever, he took  
 the

<sup>c</sup> Ibidem pag. 115.



the pain in the breast for an original complaint, whereas it was the near approach of the vomica to bursting. But at the same time, it appears from what has been said, how various are the causes of a phthisis; many have been already enumerated, (§. 1198.) but these were principally considered as first producing an hæmoptysis, and afterwards an ulcer of the lungs, and a phthisis; but there are other causes which, without a spitting of blood, often produce an incurable consumption; and the knowledge of such causes indicates a different method of cure in this disease, and at the same time is of great importance for directing the physician to make a sure prognostic; for there is more or less hope of a cure, as the known causes are more or less difficult to remove or to correct. *Bennet*<sup>d</sup>, well aware of this, in the very beginning of his book admonishes us, that diligent attention is necessary to distinguish the causes of this disease; although he owns it very difficult to distinguish them, saying, *hæc verumtamen designare non est cujusvis; in quibus exequendis sedulo naturæ invigilandum, serioque pensitandum an succus vorax radicitus devastando, calor exæstuanis liquando, remissiorve distantiores corporis particulas parce rigando, depascent;* “but it is not every man that can make this distinction, for which purpose, we must carefully watch the steps of nature, and diligently perpend, whether an acrimonious humour preying on the principles of life, an immoderate heat melting down the humours, or a less violent heat drying up the extremities of the body, consumes the frame:” but he forms various prognostics from the same sources; he has indeed many excellent observations, but this passage may serve for a specimen<sup>e</sup>, *extravasatio sanguinis ex redundantia & tensione facilius curatur quam illa, quæ ex ejus alienatione & erosionem ortum duxerit;* “an effusion of blood caused by a plethora, and an over tension of the vessels,

“ is

<sup>d</sup> Tabid. Theatr. pag. 3.<sup>e</sup> Ibidem. pag. 107.

“ is more easily cured, than that which takes its rise  
 “ from the depravation of the fluids and the erosion  
 “ of the vessels.”

Various causes of a phthisis are enumerated by both ancient and modern physicians, and among them some which one should not readily imagine; it was noted before, (§. 1198.) that *Hippocrates* had said, that the lungs were sometimes obstructed by phlegm, and a phthisis followed thence; but in another place<sup>f</sup>, where he mentions three kinds of phthisis, he says, *prima quidem a pituitâ oritur, cum caput pituita plenum ægrotarit & calor accesserit in capite pituita computrescit, ut quæ moveri nequeat ut secedat. Deinde quum crassior evaserit & computruerit, & venulæ supra modum impletæ fuerint, fluxio in pulmonem contingit, quam ubi pulmo susceperit statim morbo afficitur, cum a pituitâ salsâ & putridâ mordeatur*; “ the  
 “ first is caused by pituita, when the head being ob-  
 “ structed with phlegm, a fever comes on; when  
 “ pituita in the head, which cannot be dislodged,  
 “ grows putrid; then when it grows thicker and  
 “ purulent, and the veins are inordinately filled, a  
 “ defluxion upon the lungs comes on; by which,  
 “ when the lungs are affected, they become diseased,  
 “ being irritated by a salt putrid phlegm.”

Nay, *Galen*<sup>g</sup> seems to have given this cause of a phthisis a still greater extent, when he says; *duæ namque sunt ejus differentia maximæ: una quidem ex capitis defluxionibus constat, altera vero quæ ex ipsius pulmonis affectibus ortum ducit, prorsus quidem ex cruentis sputis, maximèque rupto vase, sæpius vero & rheumate affecto viscere, ob aliam quamdam ex aliis partibus, non ex capite causam*; “ for there are two great differences,  
 “ one consists of defluxions from the head, but  
 “ the other, which takes its rise from disorders  
 “ of the lungs themselves, from spitting of blood; and  
 “ above

<sup>f</sup> De Internis Affectibus, Cap. II. Charter. Tom. VII. pag. 645.  
<sup>g</sup> Comment. in Lib. I. Epidem. Charter. Tom. IX. pag. 23.



Sect. 1205. Of a PHTHISIS PULMONALIS. III

“ above all from the bursting of a vessel, and often from  
 “ a defluxion or humours on this viscus from other  
 “ parts than from the head.” On another occasion,  
 (§. 719.) when we mentioned mucus as the material cause of a diarrhœa, it was observed, that the ancients, when they saw sudden collection of humours in any place, thought that this collection was accumulated in the brain, (which they imagined to have scarce any blood, and to be cold) and from thence derived to other parts; hence, they were always fearful of defluxions from the head; and *Galen* seems to have known from his own experience, that such a defluxion might be derived also from other parts upon the lungs; and even a catarrh falling on the membrane which inverts the air-vessels of the lungs may, by a perpetual and long secretion of such mucous matter, occasion the vessels to be so dilated, that the useful humours may be let out together with the mucus, and the whole body be, as it were, dried up, and the patients die exhausted by a true marasmus, as I noted before, §. 793. To this is to be added, that a long troublesome cough, which constantly attends this disease, may do great injury to the lungs; for which reason, *Cælius Aurelianus*<sup>h</sup>, treating of the phthisis, says, *sit frequentius antecedente sanguinis fluxu, aliquando etiam longi temporis tussiculâ, sive catarrho quo thoracis altiora lacerantur, & primo levius, tunc ulcerata, facientia collectionem intrinsecus, quæ cum siccata non fuerint, citius sumat passio initium*; “ if  
 “ after a spitting of blood, and sometimes also after  
 “ a cough of long standing, or a catarrh, by which  
 “ the upper parts of the thorax are injured, at first  
 “ slightly, but in progress of time, being exulcerated, a collection of pus being made within, and  
 “ this not being cleansed away, the disorder is sooner  
 “ produced.” And certainly *Bennet*<sup>i</sup> also admonishes us, that the secret cause of a phthisis is often  
 in

<sup>h</sup> De Morbis Chronic. Lib. II. Cap. xiv. pag. 410. <sup>i</sup> Tabid. Theatr. pag. 9.

in a catarrh; and he adds, *ipsius denique cruoris pars salina imo insipida, pituitæ nomine communi celebrata, e vasculis secreta immoratione in parte factâ non solum partis in quâ hospitatur, tenorem & compagem dissolvendo sed putredinem exinde acquirendo, erosioni redditur accomodatum instrumentum*; “ the saline part of  
 “ the blood, nay, even the insipid humour, com-  
 “ monly called pituita, secreted from the vessels,  
 “ lodging for some time in a particular part, not  
 “ only dissolves the cohesion and fabric of the part  
 “ itself where it lodges, but itself acquiring a putrid  
 “ disposition by its stay, it becomes the ready cause  
 “ of an erosion of the vessels.” He has the like observations elsewhere <sup>k</sup>, where also he enumerates the symptoms of this phthysical disposition; which partly shew the existence of a defluxion, and partly, that the lungs themselves are affected by it. But a phthisis is chiefly to be feared in consequence of an inveterate catarrh, when the body is predisposed to this disease, concerning which see the observations on §. 1198. This Celsus<sup>1</sup> seems to insinuate, when he says, *frequens autem distillatio in corpore tenui longoque tabem timendam esse, testatur*; “ frequent catarrhs in  
 “ a tall and slender body, shews that there is reason  
 “ to fear a consumption.” And although such obstinate catarrhs should not bring on at last an ulcer of the lungs, they may however exhaust the body, as was said a little above. A physician of great note<sup>m</sup>, has often experienced, *quod plures quotidie per longum tempus immensam mucii salsi, dulcis vel etiam planè insipidi, copiam rejicient per tussim, cui nec fætor inest nec purulenti aliquid glandulis nimirum cum ductibus asperæ arteriæ relaxatis nimium. Hoc tamen sæpe licet ægros diutius trahens, haud lethale minus sit quam si ipsam saniem expuissent*; “ that many persons, every day, for a long  
 “ time, throw up in coughing, vast quantities of salt,  
 “ sweet,

<sup>k</sup> Tabid. Theatr. pag. 102, &c.  
 pag 58.  
 alter. pag. 4.

<sup>1</sup> Lib. II. Cap. vii.  
<sup>m</sup> Huxham de Aere & Morb. Epidem. Vol.



‘ sweet, or sometimes quite insipid mucus, which has  
 ‘ no smell, nor any thing purulent in it, the glands  
 ‘ of the aspera arteria being relaxed. This is often,  
 ‘ tho’ the patients bear it long, not less fatal in the  
 ‘ end than a spitting of blood.” And he compares  
 the effect of such a copious and long spitting, to those  
 disorders which are produced in consequence of a di-  
 arrhoea, or a diabetes, of long continuance, by which  
 patients waste away without any matter or pus being  
 formed in the body: and hence he concludes, that  
 it is not all consumptions of the lungs that are caused  
 by an ulcer, nay, that putrid consumptions are more  
 rare than is commonly imagined. Certainly, if the  
 vessels of the lungs should be so dilated, as to give a  
 passage to let out those fluids which are to repair  
 what is continually exhausted, both in the fluids and  
 in the solids, the body will necessarily waste away,  
 as was noted §. 1169. But it would be more syste-  
 matical, perhaps, to range a disorder of this kind  
 under the head of an atrophy or marasmus, than un-  
 der that of a phthisis pulmonalis; in which disease,  
 according to the definition given of it §. 1196. an  
 ulcer of the lungs is supposed.

Whatever therefore may produce an ulcer in the  
 lungs, deserves to be reckoned among the causes of a  
 phthisis pulmonalis. *Hippocrates*<sup>a</sup> has remarked,  
 that the tubes of the lungs, or the aspera arteria, are  
 sometimes subject to an apthæ, as was said before,  
 §. 978. where we also informed the reader, that by  
 apthæ were understood small ulcers, solitary, or at  
 most, but few in number, which sometimes infest the  
 inside of the mouth, the lips, and the fauces, &c.  
 They have a white or yellowish spot in the middle; all  
 round this spot is inflamed, red, and painful; sometimes  
 they are easily cured, sometimes also they turn to very  
 bad corrosive ulcers with great putridity; all these  
 little ulcers have this in common, that this white or  
 yellowish spot separates from the other parts of the  
 ulcer

114 Of a PHTHISIS PULMONALIS. Sect. 1205.  
 ulcer to which it had cohered, and then the place is  
 is soon cleansed and consolidated. The description  
 which *Hippocrates* has given of this disease, agrees  
 admirably with what we see happen in these apthæ,  
 when they are exposed to the sight; *febris imbecilli-*  
*detinet, & medium pectus dolor; & corporis pruritu-*  
*adeft, & vox rauca sputum liquidum & tenue spuit in-*  
*terdum etiam crassum, & velut ptisanæ succum in ore quo-*  
*que gravis, odor ut a piscibus crudis oboritur & alias at-*  
*que alias in sputo dura, (σκληρὰ) velut fungi in ulcere*  
*apparent, superiores partes attenuantur, atque adeo to-*  
*tus, malæ faciei rubent, ungues temporis successu contra-*  
*buntur, aridi & ex virore pallidi evadunt. Quam pri-*  
*imum autem moritur, sanguinem & pus exspuens nisi cu-*  
*retur, &c.* “ the patient has a slight fever, and a  
 “ pain in the middle of the breast; and there is an  
 “ itching of the body, and a hoarseness; the patient  
 “ spits thin and liquid saliva, sometimes also thick,  
 “ and like ptisan; the breath smells like stinking  
 “ fish, and from time to time, hard bits, like fun-  
 “ gous flesh from an ulcer, appear in the spittle;  
 “ the upper parts first (and afterwards the whole bo-  
 “ dy) are extenuated, the cheeks are flushed, the  
 “ nails in process of time are contracted: they grow  
 “ dry, and of a pale sickly colour, and the patient  
 “ soon dies, after spitting blood and pus, unless he  
 “ be cured, &c.” For in these apthæ, the mouth is  
 always filled with saliva, and if they are of a malig-  
 nant quality, there is a considerable stench; these  
 dead scabs falling off, the place remains raw and  
 bloody, and these scabs are separated by a suppura-  
 tion being begun; but if all these things be supposed  
 to happen in the aspera arteria, it is easy to conceive  
 why the voice is hoarse, and why the patient dies con-  
 sumptive, unless the ulcerated place can be soon cleansed  
 and healed.

*Galen* ° also observed, and has described the like  
 appearances; but that little eschar which *Hippocra-*  
 tes

° De locis affect. Lib. IV. Cap. 11. Charter. Tom. VII. p. 476.



act. 1205. Of a PHTHISIS PULMONALIS. 115  
 describes, (οἶον μύκης ἀφ' ἑλκεος) is called by him in  
 like signification, εφελκίς; and he relates a very ex-  
 traordinary case of a man who spit a humour very  
 much like fluid bile, which was not acrid, and the  
 quantity of which increased every day; afterwards  
 he wasted away with a gentle slow fever, and he also  
 spit up purulent matter: at four months end he spit  
 up a small quantity of blood, together with the pus;  
 at last, the fever increasing, and his strength being  
 quite gone, he died consumptive. *Galen* owns, that  
 he saw afterwards many such instances, in none of  
 which he was able to recover his patient by any care  
 or skill: the other patients whom he saw in this situ-  
 ation, after the first-mentioned case, held out longer  
 than the first; and he tried, for their assistance, every  
 method that the medical art could suggest, but none  
 escaped; and all of them, a little before their death,  
 spit out some part of the corrupted lungs. I have  
 once seen a cure of this kind in an old man of four-  
 score, whose spittle was as yellow as saffron, who,  
 weak with age, was soon subdued by the disease; that  
 is to say, in two months time he complained of the  
 bitterness of the matter which he spit out: and *Ben-  
 net*, although he seems to have gathered the remarks  
 he has published on this disease, more from assiduous  
 observation in his own practice, than from reading  
 authors, yet he does not appear to be ignorant of  
 cases of this kind; for he says <sup>p</sup>, *pulmonarii aquarum  
 nitiorum adfluxum & transitum diutius ac facilius semper  
 sustulere; humorum vero biliosorum ægre & per tempus  
 tantum; salinorum vero & nidorosorum crassescantium  
 perfusione & expressione quam citissime pessumdantur;*  
 “ persons whose lungs are affected, bear longer and  
 “ with less pain and inconvenience the defluxion of  
 “ mild humours, but defluxions of bilious humours  
 “ give more uneasiness, and destroy sooner; but  
 “ men are soonest of all brought to their end by de-  
 “ fluxions and excretions of salt, putrid, and thick  
 “ humours.”

“ humours.” Certainly, every one will easily believe, that a disease will scarce ever be more accurately described, than by a skilful physician, who has himself been subject to it, his faculties remaining sound in a sick body : for this reason, *Sydenham’s* account of the gout is so much esteemed, and *Tralle’s* history of the gonorrhœa ; thus also *Bennet* himself was very consumptive, and cured his own disorder.

<sup>a</sup> *Phthisin discutis,*

*Non authorum tantum testimonio,*

*Sed damno tuo ;*

*Idem nempe aliquando extitisti*

*Et æger & medicus.*

*Haud facile dictu,*

*Gravius laboraraveris an gloriosius evaseris.*

*Tabidorum Theatro prælusorium hoc opus marcescenti  
olim tui & pene sceleti anatome.*

*Securiorem nunquam lector adhibeat fidem, sensit, curavit, scripsit.*

“ Thou treatest of the phthisis,

“ Not only from the accounts of authors,

“ But from thy own sufferings ;

“ And thou art at the same time

“ The patient and the physician.

“ It is not easy to say,

“ whether thy disease was more grievous, or thy

“ recovery more glorious.

“ This work, the prelude to the *Theatrum Tabido-*

“ *rum*, was the anatomy of thyself wasting away

“ and almost reduced to a skeleton. In no other

“ author can the reader more securely confide, than

“ in him, who suffered, who cured, and who described

“ the disease.”

Sometimes it happens, that calculi are generated in the lungs. I have sometimes seen such matter thrown out by a cough, friable and like a plaister, sometimes much harder, of a rough figure ; for the most part, an hæmoptysis follows on a violent and continual cough, as also if

a rough

<sup>a</sup> Vid. carm. prefixa, Theatr. Tabid.



# Sect. 1205. Of a PHTHISIS PULMONALIS. 117

a rough jagged calculus, agitated by a cough, have lacerated some of the vessels of the lungs; sometimes there is a long dry cough, then the patients spit up pus, and waste away by slow degrees. Willis<sup>r</sup> testifies, that in the bodies of several who had died of a consumption, *invenerit pulmones ab ulcere quovis immunes, sed tuberculis aut lapidibus aut materia sabulosa, per totum confitos*; “he had found the lungs quite  
“free from any ulcer, but obstructed all over with  
“tumours, calculi, or sandy substances.” Hence he disapproves of that definition of the phthisis, which supposes an ulcer of the lungs, and chuses rather to say of this disorder, *quod sit totius contabescencia a mala pulmonis conformatione orta*; “that it is a wasting  
“of the whole body, caused by a vitious conformation of the lungs:” it is however, certain, that these calculi often occasion an ulcer of the lungs, as I myself have seen, and almost always bring on an incurable consumption, which Bennet<sup>s</sup> also confirms, saying, *phthisici quibus pulmones ob lapidum & ossium in æqualium innascentiam, lacerati fuerint deploratissimi*, “they  
“whose lungs are injured by hard boney substances,  
“or rough stones formed in them, are irrecoverable.” It is true, indeed, that whatever much impedes the function of the lungs, may justly be accounted a cause of a general consumption of the body; for the instrumentality of the lungs in the animal œconomy is of more importance than that of any other viscus, as the lungs are the principal organ, by whose action the chyle is assimilated to the form of the solids and fluids of the whole body<sup>t</sup>. Hence, if great part of the lungs should become schirrous, or grow rigid by calculi, or by gravel obstructing them, a man may be consumptive without an ulcer in the lungs; but it cannot be denied, that these causes often produce an ulcer in the lungs, and that if such patients hold out

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any

<sup>r</sup> Pharmac. ration. Tom. II. Sect. I. Cap. vi. pag. 87. <sup>s</sup> Tabid. Theatr. pag. 110. <sup>t</sup> H. Boerhaave, Institut. Med. §. 200 & 208.

any long time, a putrid phthisis almost always ensue although the disorder originally were only a marasmus, from a defect of chyle so perfectly assimilated as to supply the daily loss of solids and fluids, which the body sustains, even in perfect health; practice observations altogether confirm this assertion.

*Mead* <sup>u</sup> has observed, that those persons were more liable to ulcers in the lungs, who had strumous swellings in childhood, or youth; and he adds, *experientissimum medicum Radclivium dicere solitum, phthises nostris & frigidioribus regionibus esse plerumque strumosas. Sæpissime itaque videmus in tabidis, post mortem incisis, pulmonem tuberculis seu glandulis induratis obstituta quæ suppurantia pus exspuerant*; “ that most experienced physician *Ratcliff*, used to say, that most consumptions in *England*, and in other colder countries, were of the strumous kind; and we often see, in dissecting the bodies of patients who have died of a consumption, the lungs filled with tumours, or indurated glands, which had suppurated and discharged matter.” But we often see, in persons who have the evil tumours in the neck, last for several months, or even years, without suppurating; and when they begin to suppurate, some amon them only do this, not all of them together: beside it is an observation confirmed by many instances, that these tumours lodge also in other viscera; at the same time it appears, that these tumours, even in the same body, are composed of different substances; for sometimes they contain a white or greyish matter, a mealy consistence, more or less soft; sometimes these tumours are equally hard and scissile; in some a matter is contained like lime moistened with water and which has no roughness to the touch; in others there is found a calcarious hard substance, rough to the feeling, concreted, as it were, into a fungous stone. In the body of an asthmatic youth the lungs were found

<sup>u</sup> *Monita & præcept. med. pag. 46. medendi, Tom. II. pag. 180.*

<sup>w</sup> *De Haen. ratio*



found in part ulcerated, and in part full of tubercles, containing a chalky matter: the concave side of the liver, the spleen, and the whole mesentery, had great numbers of such tubercles <sup>x</sup>. In a boy of four years old, who had appeared perfectly recovered of a beginning consumption, but had died in convulsions, the lungs were found filled with tubercles, some of which contained thin pus, others a substance as thick as new cheese <sup>y</sup>.

If, therefore, the lungs be stuffed full of such tubercles, and there be contained in them a thick limy matter, which is slowly and difficultly brought to suppurate, a man may perish by a slow marasmus, on account of the action of the lungs in making the chyle being impeded, before a purulent phthisis comes on; which, however, would have ensued, if the patient had survived any longer. There are curious observations which entirely confirm this <sup>z</sup>. A soldier 25 years old, came into the hospital; he was afflicted with a slow fever, a dry cough, a slight oppression of the breast, his face was pale, and his body extremely emaciated: after twice bleeding, he was put on a milk diet, and in the evening they gave him syrup of white poppies; nothing was of any use, he grew still thinner, his strength decayed, and he died quietly, without a diarrhœa, which is generally the concluding scene in a phthisis, as will be seen hereafter; his respiration through the whole course of the disease had not been very laborious. On opening the body, the lungs being handled, felt as if they were quite filled with gravel, and the lobes of the lungs being opened, there was discovered a great number of hard tumours, each as big as a pea, which contained a matter resembling plaister, but softer. Another soldier 28 years old, emaciated and weak, was afflicted with a very troublesome cough for 8  
I 4 months;

<sup>x</sup> Giov. Mich. Gallo del uso del latte, Tom. II. pag. 91.  
<sup>y</sup> Medical Essays, Tom. II. pag. 298. <sup>z</sup> Barrere Observation.  
anatom, &c. pag. 124, &c.

months; being brought into the hospital, he was put to bed with a slow fever; he coughed much, he spit but seldom; and when he did, the saliva was tenacious, white, but never purulent; he could not bear to lie on the left side. Various remedies were tried but all in vain, slight sweats succeeded, sudden emaciation, a difficulty of swallowing, a suppression of the voice, and death; but he never had any diarrhoea. On dissection, the lungs were found adhering on every side to the pleura, filled every where with very small tubercles, about the size of a grain of millet: when the lungs were squeezed by the hand, hard tubercles were felt as big as a nut; some of these being cut were found to contain a white matter resembling soft plaister, one only of these was found full of pus. In the upper part of the right lobe was a swelling as hard as a stone, as big as a small hen's egg. The celebrated author of these observations justly remarks, that such a disorder, come to its height, was incurable; but when he had traced the symptoms of this disorder in its beginning, he preserved many soldiers, by sending them to a purer air among the mountains.

But at the same time it appears from this instance, that such tubercles, although they were originally hard, and filled with a chalky matter, yet by length of time suppurated, and produced a phthisis with an ulcer of the lungs; so that they may be reckoned among the causes of a phthisis pulmonalis, properly so called. It may indeed happen, that these tubercles may be so numerous, as almost entirely to impede the functions of the lungs, and then the patients may die of a true marasmus, before these tubercles have come all to suppuration. Very many instances of consumptions of this kind occur in practice; sometimes after an obtuse pain felt very deep in the breast, with some difficulty of breathing, a spitting of matter follows, which somewhat relieves the patient; the quantity spit diminishes gradually, this small vomica closes up again, and the patient thinks himself well; but



but after a few months all the former symptoms return, as a new tubercle forms matter and bursts. I have seen this happen several times repeatedly, and have heard from many skilful physicians, that they have seen the like instances. The most part of these patients, however, die consumptive at last, but generally hold out a considerable time, before they sink under this disease; but when from any adventitious cause many tubercles suppurate at the same time, the patients are sooner destroyed.

After a moist rainy autumn, in which the south wind was the reigning wind, which also frequently blew the winter and spring following, a cloudy summer followed with scarce any rain; but a south wind prevailing as before, *Hippocrates*<sup>a</sup> observed, *quod ante incipientem æstatem atque in hyeme, eorum multi, qui jam subtabescebant longo tempore, tabidi decubuerint: quando quidem multis etiam dubie se habentibus tabes tunc confirmata fuit*, “that just before the beginning of summer, in the summer  
“itself, and in the following winter, many of those  
“who were phthisically inclined before, fell ill of an  
“actual consumption; and to some who were in a  
“doubtful state before, a confirmed consumption  
“shewed itself:” might not they, whose lungs were filled with hard tubercles, be justly called phthisically inclined? Is it not likely enough, that such symptoms should arise in these patients in a constitution of the air like this recounted by *Hippocrates*, especially as he premises the following things<sup>b</sup>: *Pluribus tusses aridæ nihilque tussientibus educebatur, atque voces non multo post rauscescebant*. “Many had dry coughs,  
“and they spit nothing up in coughing, and the  
“voice soon after grew hoarse.” Nay, it is probable, that this epidemical constitution of the air is so adapted to produce a pthisis, that they who were naturally inclined to this disease, but who had

<sup>a</sup> Epidem. Text. 18. Charter. Tom. IX. pag. 22, & seq.

<sup>b</sup> Ibidem. pag. 20.

not yet been attacked by it, now began to be seized with it, and many died. Nay, *Hippocrates* adds, that he does not remember that any of the patients attacked therewith, held out any moderate time, as they died much sooner than was usual in this disease. Other diseases which reigned at the same time, were not very grievous or mortal. Many other observations are found in *Hippocrates*, which shew a great affinity of symptoms with those which are observed in tubercles of the lungs, but which I forbear to mention to avoid prolixity. What has been said will, I hope, suffice to shew, how many various kinds of consumptions there are, and from how many different causes they may arise. We are next to see, how and with what symptoms an ulcer of the lungs degenerates into a phthisis, and terminates in death.

## S E C T. MCCVI.

**T**HE effects of an ulcer already formed in the lungs, but concealed, (and called a vomica) are mostly observed to be the following: a daily increasing acrimony, quantity and putridity of the matter, the dilatation, corrosion and maceration of the membrane inclosing the pus; a conversion of the blood-vessels, and of the bronchia into pus; a purulent consumption of the whole substance, or of one of the lobes of the lungs: an almost perpetual dry cough, or at most only forcing out a small quantity of saliva by the agitation of the cough; the turning of the blood flowing to the ulcer into pus, the extension of the vomica in the lungs, its bursting into the tubes of the larynx, an excretion of pus sometimes instantly suffocating, or else continual every day with a cough; copious, sinking  
in



Se&ct. 1206. Of a PHTHISIS PULMONALIS. 123

in water, thick, sweet, fat, fœtid, white, red, yellow, livid, ash colour, ropy, and smelling like stinking meat when thrown on the fire. A bursting of the vomica into the cavity of the thorax, occasioning a very great difficulty of breathing. The symptoms of an empyema, (§ 1188. N° IV.) then a very difficult respiration, a consumption of all the blood and chyle into purulent matter; the preparation of the nutritious juices impeded, an almost entire wasting of the solids, an hectic fever, with a low, small, languid pulse; a sharp heat in the upper parts of the body, flushing in the cheeks, the facies hippocratica, an incredible anxiety on the chest, especially towards evening; a great thirst, profuse nocturnal sweats, red pustules, a swelling of the feet and hands, on the same side as that of the lungs affected by the disorder. A prodigious weakness, a hoarse voice, falling off of the hair, itching all over the body, with watery pustules; a diarrhœa, with yellow, putrid, fœtid, purulent, cadaverous, frequent stools, accompanied with a tenesmus, and debilitating; suppression of spitting, death; from whence the following rules are to be deduced.

A vomica, or concealed ulcer, is now formed in the lungs; but heretofore (§ 406.) in treating of an abscess, all those evils were enumerated which follow from pus long retained in an abscess: it was there said, that the pus grew acrid, putrified and corroded the parts within its reach; if these effects of pus retained and accumulated are applied to an abscess seated in the lungs, it is very evident how great evils are to be feared from thence, of which mention was also made (§ 835, 836.) where we treated of a vomica

mica of the lungs, formed after a peripneumony: it is true, indeed, that after violent inflammatory disorders of the lungs, larger vomicas are usually formed than are observed in many phthifical people; in whom, as we said in the foregoing paragraph, only lesser tubercles arise, which are used one after another to suppurate, break, and discharge themselves by spitting, and thus, preying by little and little upon the lungs, bring on a slow consumption: in the mean while, if there are a greater number of such tubercles which suppurate, and pretty close to one another; or, if they do not break soon enough, that is, as soon as each of them are ripe, they may, by length of time, and the gradually increasing quantity of pus, be changed into vomica of a considerable size; concerning which, the reader may consult the remarks on § 1185. But although a vomica of the lungs is never without danger, yet experience teaches, that many more persons recover when, after a suppuration in consequence of a pleurisy, or, of a peripneumony, they spit a larger quantity of pus at once, than when the pus is collected in smaller tubercles in the lungs. Dr. Mead<sup>c</sup> confirms these in these words, *Is morbus, etsi gravis sit, & in tabem sæpe desinat, haud tantum periculi affert, quam minores illæ exulcerationes.* “ This disease, although it be dangerous and often “ ends in a consumption, yet is not so dangerous “ as those smaller ulcers. Hippocrates<sup>d</sup> ventured to give not only hope, but certainly to promise recovery to those in whom vomicas were collected, in consequence of a pleurisy or a peripneumony: his words are, *& quicumque ex peripneumonia aut pleuritide suppurati fiunt, minime moriuntur sed sani fiunt;* “ they “ in whom suppurations are produced in consequence of a pleurisy or a peripneumony, do not “ die but recover.” But when, not after violent inflammations, but from other causes, a small vo-

<sup>c</sup> Monita & Præcept. Med. pag. 53. <sup>d</sup> De locis in homine Chap. vii. Charter Tom. VII. pag. 366.



mica was formed in the lungs, then he feared worse consequences; for he adds<sup>e</sup>, *suppurati enim fiunt quum minus exscreant quam ad pulmonem defluat. Quod enim in pulmone consistit & defluit pus sit. Pus autem in pulmone & thorace consistens ulcerat & putrefacit.* “ Persons  
 “ also have pus formed, when they spit out less than  
 “ is thrown on the lungs by defluxions; for that hu-  
 “ mour which falls upon the lungs and stops there,  
 “ becomes pus; but pus fixing in the lungs, ulcer-  
 “ ates and putrifies.” But that he had respect here  
 to tubercles of the lungs, is evident from another  
 passage<sup>f</sup>, where he thus describes them: *Tuberculum  
 vero pulmonis ita oritur, quum pituita aut bilis orta  
 fuerit, putrescit, & quamdiu quidem adhuc crudum fu-  
 erit, tum dolorem tenuem, tum tussim siccam excitat,  
 postquam vero maturuerit, anteriore & posteriore parte  
 acutus dolor oritur calores invadunt ac tussis vehemens.  
 Et si quidem pus quam citissime maturuerit, eruperit sur-  
 sum vergat, ac totum expuatur venterque in quo pus erat  
 concidat ac resiccetur, profus sanus evadit. Si vero quam  
 citissime ruptum fuerit, maturuerit ac repurgatum fundat,  
 perniciosum est illud & a capite ac reliquo corpore pituita  
 ad tuberculum defluens putrescit & pus gignitur ac expui-  
 tur quo corruptus perit. Perit autem ex ventris proflu-  
 vio;* “ tubercles of the lungs take rise thus; when  
 “ phlegm or bile is lodged, there it grows putrid; and  
 “ as long as it remains crude it excites a slight pain,  
 “ and a dry cough; but after it is ripened, an acute  
 “ pain is felt in the fore and back part of the chest,  
 “ heats molest, and a violent cough. And if, in-  
 “ deed, as soon as it is ripe it burst, and finds a  
 “ passage upwards, and is quite spit out, and the  
 “ tumour which contained the pus subsides and dries  
 “ up, the patient recovers. But if it grow ripe,  
 “ and immediately burst, and a spitting comes,  
 “ yet it is not quite evacuated, but the tubercle  
 “ continues to discharge pus upon the lungs,  
 “ this is fatal; and phlegm flowing from the head

<sup>e</sup> Ibidem. <sup>f</sup> De Morbis, Lib. I. Chapter. VII. pag. 540, 541.  
 “ and

“ and the chest of the body on these tubercles grows  
 “ putrid, and pus is formed and is spit out, and  
 “ the patient dies phthifical, with a diarrhœa.”

Physicians and surgeons know, by daily experience, that there is a great difference in the cure even of such ulcers as they can have access to with their hands; for if an abscess follows upon a violent inflammation, when it is ripe they open it, and thus procure a free discharge of the gathered matter; the tumour subsides, the whole surface of the cavity in which the pus lodged is cleansed by a gentle suppuration, and thus the sides of the tumour are reduced to the state of a single wound; and being kept close together by the moderate pressure of a bandage, a perfect consolidation is effected. But when scrophulous tubercles begin to suppurate, how slowly do all things proceed, how tedious are these disorders in curing, what disfiguring, deep, and rough scars remain! When scorbutic ulcers break out in the legs, they gradually prey on all the neighbouring flesh, and elude all the art of the surgeon for years together, unless the scorbutic acrimony of the humours can be corrected. From the consideration of these instances it will appear, why large vomicas in the lungs are often happily cured, and less tubercles often are so difficult to heal. It has before been shewn, that tubercles have been found in consumptive persons, which contained so hard a matter, as not at all, or with great difficulty, to be brought to suppuration. We have seen that an hæmoptysis, and afterwards an ulcer of the lungs, is sometimes caused by an erosion of the vessels from the acrimony of the fluids mixed with the blood; whence it is easy to see, how difficult the cure must be, when, after one of these tubercles has suppurated and burst, the same vitious disposition remains in the blood; from whence the same evil may spring up afresh, or at least the cavity of such a vomica may be hindered from being cleansed and consolidated; nay, new pus will continue



continue daily to gather in it. Then things are in the situation which *Hippocrates* describes in the passage above quoted, where he says, *quod non possit reficcari sed ipsum tuberculum ex se pus effundat*; “it cannot be dried up, but the tubercle pours forth pus from itself.” When, therefore, a spitting of blood continues long without diminishing or increasing, it is deservedly reckoned a very bad sign; wherefore *Hippocrates* observes<sup>g</sup>, *quibus in pulmone tubercula fiunt, pus educant ad quadragintas dies postruptionem, hos vero transgredientes plerumque phthisici fiunt*; “they who have tubercles in the lungs, spit pus for forty days after such a tubercle breaks; if the spitting continues longer, they generally become consumptive.”

In treating of the pleurisy, §. 890. N<sup>o</sup> 1. it was observed, that *Van Helmont* held a pernicious acid fixed in the pleura and spaces between the ribs, to be the cause of that disease; and that he called it the pleuritic thorn, which he would have plucked out, or so blunted at least, as not to hurt: as a thorn in the finger produces an inflammation and suppuration unless it be drawn out, he would have it that the case was exactly the same in his *spina pleuritica*, and disapproved entirely of bleeding in this disorder. It is certain, that by the suppuration raised in the finger, the thorn is forced out together with the pus, which sticking in the finger caused both the inflammation and suppuration: and it is equally true, that by other suppurations those vessels which are stopt up with an inflammable matter too hard to be resolved, are separated from the neighbouring vessels; and this being done, and the pus evacuated, and the wound consolidated, the disease is cured. But *Helmont* himself had observed, that it was not always so very easy to cleanse such ulcerous cavities, and to consolidate the wound when cleansed; on which account he says in his own singular style, <sup>h</sup> *spina enim evulsa, facile*

<sup>g</sup> Coac. Prænot. N<sup>o</sup> 404. Charter. Tom. VIII. pag. 876.

<sup>h</sup> Pleura furens, pag. 329. N<sup>o</sup> 21.

128    Of a PHTHISIS PULMONALIS. Sect. 1206  
*cile cessat reliquum, nisi forte diturna mora apostema ipsum fecerit spinosum. Nam semel nato apostemate vel ulcere, licet a tergo nec radicem in corpore sint nata, nec aliunde foveantur per se stant deinceps, subsistuntque absque alia nisi tutela. Incumbendum ergo erit spinam evellendæ. Estque tabidi ulceris pertinacia, quod ulcerum jam spinam non habeat sed spinosum evaserit;* “ for  
 “ the thorn being pulled out the remaining disorder easily ceases, unless the thorn by its long stay have made the abscess itself thorny: for an  
 “ imposthume or ulcer once formed, although they have no root of their own in the place itself, nor  
 “ are supported and supplied from other parts, keep their ground by their own power and force without any foreign aid. We should be solicitous  
 “ therefore for plucking out the thorn. The obstinacy of a phthifical ulcer consists in this, that although the original thorn is gone, the ulcer itself  
 “ is become thorny.” By a thorn, this author means every cause which is capable of producing an inflammation or a suppuration; but as such an ulcer of the lungs cannot easily be cleansed and consolidated, it daily collects new matter. The reasons of this difficulty will be explained, when we treat of the cure of a phthisis. But by a constant suppuration the whole substance of the lungs may be consumed and destroyed, as we see in external parts, fistulous and sinuous ulcers not only consume the membrana adiposa, but also the muscles, and even the very bones themselves: and it has been observed, in dissecting the bodies of such persons as have died of a consumption, that the lungs have been consumed in whole or in part. We took notice before, §. 1199. that polypose concretions spit out sometimes in coughing, after an hæmoptysis, had deceived physicians by their appearance, so as to make them think that some blood-vessels of the lungs had been spit up; but it seems possible, that by a long suppuration  
 some



Some of the bronchia of the lungs may be so loosened from the neighbouring parts to which they cohered before, as to be spit out, although some have doubted of this. *Galen* indeed, as we noted before, §. 1205. has observed, that some consumptive persons spit out part of the corrupted lungs. *Bennet*<sup>i</sup> attests, that he has more than once seen *pulmonis parenchyma æquali attritione ita dissolutum, ut in putrilaginem limi quamdam speciem præ se ferentem reductum videretur*, “the substance of the lungs so ground down and dissolved, that it seemed reduced to a putrid mass resembling mud.” Nay, he says, *quos phthisicorum acris & inæqualis perdiderat deprædatio, horum pulmones, præsertim lobos frustulatim laceratos & quasi sorice demorsos aperto cadavere deprehendit*; “that in those whom a violent and hasty consumption has destroyed, he has found the lobes of the lungs torn, and as it were gnawed, as if a mouse had bit them.” I remember myself to have seen like appearances in bodies opened; and a considerable number of observations are to be found in *Bennet* and many other authors, which there is not time to enumerate: the testimony of *Diemerbroek* alone<sup>k</sup> will be sufficient, who not only found the lungs so ulcerated, that scarce half of them was left entire; but in a man who died consumptive, from a wound in the thorax being neglected two months after the wound was given, *invenit vulnerati lateris totum pulmonis lobum suppuratione adeo consumptum, ut ne minima quidem ejus particula in illo latere superesset; imo fere dixisses nunquam in illo latere quicquam pulmonis fuisse*; “he found the whole lobe of the lungs on the wounded side so entirely consumed by suppuration, that no portion of it remained; and one would have thought, no such viscus had ever existed on that side.”

This instance is the more worthy of note, as *Diemerbroek*, who was the professor of anatomy at

VOL. XII.

K

Utrecht,

<sup>i</sup> Tabid. Theatr. pag. 64.  
pag. 310.

<sup>k</sup> Anatom. Lib. II. cap. xiiii.

*Utrecht*, examined the body with the utmost care, in presence of another physician and two surgeons, to the end they might give an account to the magistrates, whether the wound inflicted so many months before was the cause of his death.

It may seem wonderful, that in such a case the patient did not rather die of a sudden hæmoptysis, as the right ventricle of the heart would propel the blood through the pulmonary artery into the wasted lobe of the lungs. This indeed sometimes happens, but rarely, and the patients much oftner die of a slow consumption. Very many instances certainly shew that when a suppuration is begun there is less danger of an hæmorrhage. We see this in wounds and in amputations. When in persons subject to an hæmoptysis (even when they have had returns of this complaint) a suppuration begins, the spitting of blood soon ceases; although a constant cough, and that sometimes violent enough, remains. I have seen the whole kidney so consumed by an ulcer, that nothing was left of it but the external membrane, yet there had been no blood come out with the urine but only pus. Perhaps some particulars might be found in the fabric of the lungs, which would account for this difficulty. It is known that the lungs are divided into large lobes, and these again are subdivided into smaller lobes, each of which divisions a branch of the pulmonary artery enters (a large branch for the great, and smaller branches for the small lobes), of which the great lobe is composed. *Ruyssch* examining the structure of the lungs, found *vasa sanguinea unius lobuli (in pulmone vitulino) nullum habere commercium cum alterius lobuli vasis intercedent membrana, aut septo membranaceo. Imo membrana cujusque lobuli ambit tantum lobulum proprium: vasorumque ramuli tantum prospiciunt suo proprio lobulo. Hoc ita sese habere in pulmone vitulino expertus sum; in homine vero non semper (si unquam) illud locum habere;*

“tha



that the blood vessels of one lobe had no communication with those of another, a membrane dividing each from each. Nay, the membrane of each small lobe wraps up that lobe only, and the branches of the vessels each of them supply only that lobe to which they belong. This, says he, I found to be the case in a calve's lungs; but that the same arrangement did not always (if ever it did at all) prevail in human bodies." However, in another place <sup>m</sup> he demonstrates the subdivision of the greater lobe of the lungs into innumerable minute lobes. *Helvetius* <sup>n</sup> on examining the structure of this focus, found that the arteries do not pass from one lobe to another, but each of them supplies its own peculiar lobe, and that the larger branches ran between the lobes. *Lieberkuhn*, than whom I never knew a more skilful enquirer into the structure of the viscera, and whose too early death I with other good men lament, remembering with a grateful heart how many and important things I learnt from him, and how beautiful preparations I have of his, commemorated this discovery, and shewed a preparation of a part of the human lungs (in which the external membrane was taken off) divided into small lobes, which were suspended from the aspera arteria: he injected three different branches of the arteries and one vein with an injection of four different colours, and by this means exhibited an evident proof, that there is no communication between the lobes by the blood-vessels: and hence we may comprehend, how some one small lobe of the lungs may have its vessels obstructed, may be inflamed, and suppurate, without communicating the disease to the neighbouring lobes. Thus we understand how a slow consumption may gradually prey upon the lungs, without bringing on sudden and mortal hæmoptysis, as the disorder creeps by little and little from one lobe to another,

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and

<sup>m</sup> Thesaur. Anat. VI. N<sup>o</sup> 92.  
18. Mem. pag. 38.

<sup>n</sup> Academie des Sciences,

132 Of a PHTHISIS PULMONALIS. Sect. 1206  
and small arterial branches supply each lobe with blood, the circulation thus remaining unhurt and free through that part of the lungs which is still sound; also from the consideration of this structure of the lungs, we see what those tubercles in the lungs are, which physicians have so often observed to become inflamed, and to suppurate successively.

It is, however, to be confessed, that the lungs are not always found consumed in the bodies of persons who have died of a consumption, although a very great quantity of pus had been spit out daily, and the physicians have suspected from thence, that the viscus was entirely consumed. I freely own, that this has happened to myself; and there was a singular instance of this kind in the hospital at *Vienna*<sup>o</sup>, where after a very copious discharge of pus, by spitting, the lungs were found entire, but adhering on every side to the pleura, and to the pericardium on the left side of the thorax; but which way soever they were cut, not a drop of pus, nor the least marks of a vesicle, were to be found on opening the trachea; however, some pus was found there. But certain experience shews, that a suppuration does not always consume the part from whence the pus arises; and yet, that when a great quantity of pus is daily excreted, the body wastes away. After an amputation of the breasts, or of the limbs, surgeons often, to their great regret, see their patients waste away, while an excessive quantity of pus is discharged from the wide surface of the wound; so that all the fluids of the body, turning successively to pus, are evacuated, and the patient, who in the beginning seemed in a fair way of recovery, dies quite exhausted. But a short time before death, all the wide surface of the wound grows dry, and after death, no traces of any pus appear. I have seen very large ulcers in the leg which had discharged every day, for many years, an incredible quantity of foetid ichor; and after that

<sup>o</sup> De Haen. ratio medendi, part 1. p. 118.



By the use of the bark, good pus began to be formed instead of this ichor, the wound began to cicatrise, and there did not seem to have been any great loss of substance after the wound was quite closed up and consolidated. Before, §. 158. 7. it was observed from *Hippocrates*, that ulcers dried up when the patient was near death; on which account, he reckoned the drying of an ulcer a mortal symptom. If this also happens in a phthisis, but little pus will be found after death, and that little scarce any where but in the bronchia, as patients have not strength left to cough and spit, when near their end. Whence *Hippocrates* observes, as we shall see hereafter, that a suppression of spitting in consumptive persons, is a token that death is very near.

Hence also the reason is clear, why, when one lobe of the lungs is purulent, the pus is sometimes found on the other side of the lungs; for while the patients, now become very weak, endeavour to spit, but cannot, the pus is pumped up into the aspera arteria, from whence it may fall back to either lobe of the lungs. Dr. *Simpson*<sup>p</sup>, in dissecting a man who had discharged a great quantity of blood before his death, found a schirrus on the upper part of the right lobe of the lungs; and at the same time a sinus full of pus, big enough to contain a man's finger: he found also a calculus, and a quantity of water in the cavity of the right breast; but the left lobe of the lungs appeared sound, well coloured, without any hardness; and he was surprised to find pus come out every where, when he cut the substance of the lungs in different places; but the pus did not issue in large quantities together, but by a drop or two only at a time; so that it is probable it came from the branches of the aspera arteria, as they were successively cut open.

[An almost perpetual dry cough.] So long as a tubercle, or a larger vomica not yet open, presses upon

134 Of a PHTHISIS PULMONALIS. Sect. 1206  
 and irritates the neighbouring parts, this produces a cough, which is either entirely dry, or, at most, a little mucus only is forced away by the agitation of the lungs in coughing; but nothing of pus as yet appears in what is spit up. Concerning this, let the reader look back to what we said §. 834, 835, 836, of a vomica of the lungs. *Cælius Aurelianus*<sup>1</sup> called these sputa limpida, and says, while they kept this appearance, *nondum phthifici judicantur, in phthificam vero passionem proni ac declives esse noscuntur*; “the patients were not yet to be accounted actually phthiscal, but to be judged prone, and inclinable to a phthisis.” As the principal hope of cure in a vomica is in its soon breaking, and then being capable of being cleansed and consolidated, we see why, if the vomica remain closed, the danger is greater. *Hippocrates*<sup>2</sup> tells us, *difficulter spirantes, ex siccitate multa cruda educentes in tabe, perniciose habent*; “they who have a difficulty of breathing, and afterwards spit up many crudities in a consumption, are in a dangerous way.” *Duretus*<sup>3</sup>, in his comment on this place, would have us read *πλήρωσει* instead of *ξηρώσει*, so as to make *Hippocrates* deduce the difficulty of breathing, not from want of moisture, but from a fulness of the lungs, oppressed by a putrid vomica. Certainly, if these persons throw up many crude humours, the cough cannot be called a dry cough. *Bennet*<sup>4</sup> lays down the following general practical rule, *si spirabilia materiam quamcunque diutius retinuerint, medelæ difficultatem commonstrant*; “if the organs of respiration retain any matter very long, this shews that the cure will be difficult.”

An afflux of blood to the ulcer, &c.] When we treated of wounds §. 158. 7. we said, that pus was formed without the vessels, but that the matter from whence it was formed, was brought to the place by the

<sup>1</sup> Morb. chronicor. Lib. II. Cap. xiv. pag. 422.  
 Prænot. N<sup>o</sup> 445. Charter. Tom. VIII. pag. 878.  
 Hippocr. pag. 321,      <sup>2</sup> Tabid. Theatr. pag. 107,

<sup>3</sup> Coac.  
<sup>4</sup> In Coac.



the vessels; nor does it seem to be the red blood which  
 is changed into pus, but rather thinner fluids, se-  
 creted from the blood: for so long as the wound is  
 bloody we see no pus; but afterwards, the vessels con-  
 tracting, the surface of the wound grows moist with  
 thinner humour, which gradually turns to pus  
 on the surface of the wound, if it be guarded  
 from the air; for if the wound be exposed to the air,  
 it all dries up and a scab covers the wound, under  
 which scab pus is formed. We there saw also, that  
 sound humours were turned to pus, and that these  
 even made pus sooner than diseased humours; for  
 when once pus has appeared in a wound, if it be  
 wiped away, new pus is formed again in 12 hours  
 or even sooner: but an inflamed humour re-  
 quires longer time before it can be converted into pus,  
 and perhaps it turns to pus so much the more slowly,  
 by how much it is more dense and viscid, or by any  
 other qualities, recedes most from the condition of  
 healthy fluids. Thus we shewed before, §. 830.  
 that a peripneumony was successfully cured by a spit-  
 ting of thick yellowish matter, mixed with a little  
 blood, and soon changing to a bland whitish saliva,  
 which kind of saliva is certainly altogether like pus.  
 Thus we observe, that mild quinsys suppurate soon-  
 er. We shall see hereafter, that in the mildest kind  
 of small-pox the eruptions come out slowly, but ripen  
 soonest: as therefore the blood of the whole body  
 must necessarily pass through the lungs if once a sup-  
 puration is begun in this viscus, it is not strange, that  
 the quantity of pus should increase daily, and that  
 the vomica, while it remains closed, should be en-  
 larged more and more; or if it break, that new pus  
 should continually be generated, which will as con-  
 stantly be discharged by spitting; and thus by de-  
 grees, all the fluids in the body may be converted  
 into pus, unless this ulcer in the lungs can be cleansed  
 and consolidated. We observed before, that more  
 men recovered after the discharge of pus from a large

vomica, than when a smaller ulcer preyed upon the lungs. *Cælius Aurelianus* " seems to have made this distinction, when he says, *passio empyetica sive ἀναφορῆτις discernitur a phthisi non aliter quam ulcerum collectione*; " a purulent disorder is distinguished from " a phthifical complaint, no otherwise than by a " collection of ulcers." Now he had called this empyetic disease before a purulent, or vomifluous disorder: but he adds afterwards, *sepe coadervatam puris copiam excludunt repente empyici, ac deinde egestione factâ febribus atque horroribus præteritis liberantur, ut aut omnino iis careant, aut ex parte afficiantur: in phthificis ea quæ supra diximus antecedant & liquida paulatim non coadervata excludantur, & pro modo auctæ passionis etiam febres augeantur*; " empyetic persons " often discharge the collected quantity of pus, and " after this evacuation are relieved from the fever " and shiverings which they had before, so as either to " be entirely freed from them, or at least, in good measure: in phthifical persons the symptoms we have " mentioned, precede, and by degrees, humours " not accumulated, and less dense, are discharged, " and the fever increases as the disease increases."

If now a large vomica of this kind be formed in the lungs, and after breaking is not soon cleansed; or if a small tumour gradually creeping on preys on the contiguous part of the lungs, which has not yet suppured, nor has had a vomica formed in it, at length this whole viscus may be consumed, as we observed before, or at least, the fluids acceding to the lungs, may be daily converted into pus, which is evacuated by spitting; and thus the wretched sufferers will waste away slowly, although the lungs may be found entire after death: for if the passage be free for the pus into the trachæa, no quantity of it will be accumulated, but it will be spit out as long as the patients strength lasts, and their sides are firm, to throw out the pus by coughing. Hence we may also



to understand, why patients sometimes hold out a long time under this disease; that it is when some small lobe of the lungs only suppurates, and the contagion does not reach the neighbouring lobes, or extends to them, however, but slowly. Galen<sup>w</sup> said of these ulcers of the lungs, *quæ vero in pulmone jam longo tempore remanserunt, quamvis aliquando curentur relinquant tamen in ipso callosum quid & fistulosum, quod tractu temporis levi occasione excoriatur*; “those which have remained long in the lungs, although they are sometimes cured, yet they leave behind them something callous and fistulous, which, in process of time, will turn to a sore, from slight causes.” Willis<sup>x</sup>, attending to such old ulcers of the lungs, said, *ita ut materies ibi collecta in massam sanguineam minime transferatur, sed quotidie tota copiâ licet ingenti expectoretur. Taliter affecti, quasi tantummodo fontanellam in pulmone haberent sputum etsi multum & crassum imo flavum & purulentum quasi, omni mane, aliquantulum in toto die rejiciunt tamen alias satis sani, degunt bene respirant comedant & dormiunt, εὐσπνέουσιν, aut saltem in modico corporis habitu, perstant & non raro persenescent*; “a kind of ulcerous cavity is formed in the lungs, which has its sides all round callous, so that the matter collected there, does not at all pass into the mass of the blood, but all of it, copious as it is, is daily expectorated. Persons in this situation, as though they had only an issue in their lungs, although they spit up a large quantity of thick matter, which is even yellow, and as it were, purulent, every morning, or at some little quantity through the rest of the day, are yet in other respects in tolerable good health; they breathe freely, eat and sleep well, are in good case, or not however excessively emaciated, and sometimes live to old age.” I myself have seen some such instances, one especially of a person of distinction, who

<sup>w</sup> De locis affect. Lib. IV. Cap. viii. pag. 467.  
dicam. operat. Sect. I. Cap. vi. pag. 161.

<sup>x</sup> De me-

who died upwards of 70; him I saw, for four years before his death, spit out every morning some ounce of white well-digested pus with great ease, and in the rest of the day he frequently spit out the like matter. He solemnly affirmed he had spit out a like quantity of pus for 30 years, and this was confirmed by physicians deserving of credit, who had known him long, and had formerly been consulted by him; he followed his usual employments to his death, and used a pretty high and plentiful diet, having a good appetite. Several such instances are to be found in *Schenkius* <sup>y</sup>.

We have spoken already §. 836. N° 2. of the danger which attends the sudden breaking a large vomica of the lungs, and its pouring a great quantity of pus all at once into the trachæa; but this does not often happen in a phthisis, in which, for the most part, these patients spit pus daily, and waste away gradually.

Daily, and in large quantities with a cough.] In external ulcers, the great hope of cure consists in the free secretion of pus daily from the surface of the wound, and that no part of the pus be retained long, and being rendered acrid by time, may injure the sides of the cavity in which it is lodged, from whence, as was said before, §. 413. and the following sections, the fistulæ and sinusses, will, with difficulty, be closed up, unless the pus be hindered from remaining long in them, which is best effected by cutting asunder the whole cavity, in which the pus is collected; and then the sides of such a cavity, by suitable remedies, may be so cleansed, as to be brought to the condition of a simple wound; thus a perfect consolidation may be obtained: but as such methods cannot be taken in curing an ulcer of the lungs, we see the reason why the cure of such an ulcer is so difficult.

By how much the matter spit up in this disease deviates from the qualities of laudable pus, by so much,

<sup>y</sup> *Observat. med. rar.* pag. 260.



Sect. 1206. Of a PHTHISIS PULMONALIS. 139

much, *cæteris paribus*, the hope of a cure is less ; for whether this proceeds from the nature of the matter being too long retained in a fistulous ulcer of the lungs, and rendered more malignant by its stay, or whether the ulcer itself constantly pours forth a sharp ichor of a different quality : from good pus there is always a danger, that the evil should extend itself more and more, or that the pus, rendered both more acrid and thinner by delay, being re-absorbed, should infest the whole body in such a manner, as to make it unfit for nutrition, and thus cause the body to waste away. See to this purpose what is said §. 406. of the hurt done by pus too long retained ; wherefore in all these persons who have held out many years with an ulcer in their lungs, there was a free and constant excretion of good pus.

The appearances in the pus, which denote it to be of the laudable sort, were mentioned before, § 387. to wit, that it should be white, smooth, of one colour throughout, not at all foetid ; and that is accounted the worst kind, whose qualities are most remote from these : and on the contrary, it is esteemed a hopeful sign when bad pus is so much mended by a proper diet and suitable remedies, as to gain a greater resemblance in its appearance to the good sort : for this reason physicians attentively examine the saliva of phthysical persons, in order to form a proper prognostic from thence. *Hippocrates*<sup>2</sup> has said, *phthysicorum in aquam salisam expuentium, sputa si ad fundum tendant cito pereunt* ; “ if what is spit  
“ out by phthysical patients, being thrown into salt  
“ water sinks, they soon die.” After him almost all physicians have condemned that saliva which is dense, and which sinks when received in water ; and have reckoned this weight of the matter a sign, that some part of the solids, which were beginning to waste, made part of the matter excreted, and being heavier than water sunk in it. For pus alone not  
used

<sup>2</sup> Coac. Prænot. N° 435. Charter, Tom. VIII. pag. 877.

used to swim in water, although I have sometimes seen, that a part of what the patient spit up has swam, and another part has sunk. For this reason *Hippocrates* seems to have directed, that the trial should be made in salt water; for as this is specifically heavier than fresh water, a greater density and weight is necessary in what is spit out, to make it sink to the bottom; and therefore this circumstance affords a more certain presage. But it is to be noted, that this holds only in saliva, which is only purulent and not mucous also, for the mucus which lines the trachæa and bronchia is always frothy, and contains air bubbles; if this mucus therefore be mixed with the pus, or by its viscidty adhere to the outermost edge of it, the purulent saliva will swim on the water, although, properly speaking, the pus itself is heavier than water: from hence also we understand, why some part of what is spit out sinks to the bottom, and another part swims, though both were excreted at the same time. Hence also appears the reason why that which swims at first, afterwards sinks; which sinking happens when the mucus mixed with the pus, or adhering to its edges, is dissolved by the water, and the air-bubbles inclosed in the mucus are dispersed. These trials are best made, when, after sleep, the concocted pus is spit out, by means of a slight cough, and without straining; for then scarce any mucus is forced away along with it, but pure pus only is excreted. Thus things are in the situation which *Bennet*<sup>a</sup> describes, when he says, *in sputorum ἀναγνώγῃ, quæ ad supernas trachææ partes traducta fuerint, screatu aut tussiculâ minime laboriosis exploduntur, quæ vero imis insederunt bronchiis difficulter rejiciuntur*; “in  
 “spitting up matter, that which lodges about the  
 “upper part of the trachæa, is brought off without  
 “straining, by a slight cough; but that which has  
 “its seat at the bottom of the bronchia, is brought  
 “up with difficulty.” This same author<sup>b</sup> confirms what

<sup>a</sup> Tabid. Theatr. pag. 49.<sup>b</sup> Ibid. pag. 104.



what *Hippocrates* had said by his own observations, enumerating among the mortal symptoms in a consumption, *pus cænosum, ponderosum, colorisque cinerei quod aquâ injectum facile quasi ei commiscetur fundumque petit*; “thick, muddy, weighty, ash-coloured pus, which, on being thrown into the water, easily, as it were, mixes with it, or subsides to the bottom.”

It has also been observed, that the matter spit up in consumptions has various tastes. *Hippocrates* <sup>c</sup> mentions, *sputum crassum ex virore pallescens & dulce per tussim rejici*; “the spitting up with a cough thick matter of a pale green colour, and of a sweet taste.” Soon after he says, *quod sputum ore continens exscreaturus illud detestetur*; “the patient holding his saliva in his mouth, abhors to spit it out, on account of the ill taste.” In the *Prænotiones Coacæ* he says <sup>d</sup>, *qui suppurati futuri sunt primum salsuginosum spuunt dein dulcius*, “they in whom pus is about to be first spit out, salt saliva, and afterwards sweet; where perhaps by sweet, he understands less salt.” I have sometimes heard such patients complain of the nauseous sweetness of their saliva, when they had just spit up pus: and *Bennet* <sup>e</sup> formerly seems to have looked on this sweet saliva as a very suspicious symptom, and says, *ex profuso vitali nectare deflorescentes & arescentes, strigosos periisse*; “he had seen some, from the loss of the nectar of life, (as he calls the nutritious juices) who died faded, withered, and dried up:” for he thought the nutritious juice was excreted by this sort of spitting, and that the patients died by wasting or marasmus: and he was confirmed in this opinion, because, in the body of a man who died after such a spitting, and who had sometimes spit blood, *universa spirabilia, nec non viscera naturalia omnia quoad sensum sana comperta fuerint*; “all the organs of respiration, and all the viscera appeared  
“ found

<sup>c</sup> De morbis, Lib. II. Cap. xvii. Charter. Tom. VII. pag. 569.

<sup>d</sup> N<sup>o</sup> 403. Charter. Tom. VIII. pag. 876.

<sup>e</sup> Tabid. Theatr.

pag. 66, 67.

“ found to the sight : (but yet the lungs were uni-  
 “ versally become soft, and had lost their tone.”)  
 As also because *idem sputum igni admotum sicut succus*  
*omnis nutritius, in gelatinæ albicantis consistentiam per-*  
*coquitur* ; “ this sort of saliva, when put on the fire,  
 “ like all nutritious juices, acquired by heat the  
 “ consistence of a whitish jelly.” But his remarks  
 confirm the opinion of *Hippocrates*, who says, *spu-*  
*tum hoc subdulce in omnibus quos vidisse memini, ptya-*  
*lismo diuturniori & ut plurimum salino, præcedenti fuit*  
*confectarium* ; “ this sweetish saliva had been pre-  
 “ ceded in all those whom I remember to have seen,  
 “ by a long ptyalism, in which the saliva was mostly  
 “ brackish.”

But he reckons that saliva the best of all which  
 has no taste whatsoever ; for he observes <sup>f</sup>, *ad phthisin*  
*præconi qui frequenter insipida sputant, tardius tabescant,*  
*etiamsi ab ortu vitiosam pulmonum συστάσιν natæ fuerint* ;  
 “ they, who being inclinable to a consumption, fre-  
 “ quently spit up somewhat which has no taste,  
 “ more slowly become phthifical, although they  
 “ have some original defect in the lungs.”

Very foetid saliva affords a far worse presage, as  
 it shews a putrefaction already begun : however,  
 the author <sup>g</sup> last quoted, seems to have been of opi-  
 nion, that the saliva being foetid is not always a  
 mortal symptom ; for he says, *sanguinem purissimum*  
*putrescere si proprio tepore non foveatur* ; “ the purest  
 “ blood will grow putrid if it be deprived of its  
 “ own vital warmth.” Certainly grumous blood  
 contained in the bronchia, or pus lodging there, and  
 not soon excreted, may grow corrupt, from the free  
 access of air and the moisture and heat of the place.  
 For this reason, in another passage <sup>h</sup>, where he is  
 describing the symptoms of an incurable consump-  
 tion, he mentions, as one bad sign, a stinking  
 breath, but joins with it a great panting, or labori-  
 ous

<sup>f</sup> Tabid. Theatr. pag. 110.

<sup>h</sup> Ibidem, pag. 105.

<sup>g</sup> Ibidem, pag. 44.



as respiration. I have sometimes seen instances of patients whose saliva was most foetid, who lived a long time afterwards, and were able to follow their usual occupations. In particular, I saw this with surprise, in a youth, who spit up such very foetid matter in the morning, especially when he coughed, that I (who am not so nice as to be so easily affected with these kind of things) was scarce able to endure the stench : he had laboured under this disease for a long time before this foetid spitting began, and lived after it had began for two years, following his daily work ; but then the quantity of matter spit out suddenly increasing, he soon wasted away and died. From this instance, I understood why *Hippocrates*<sup>i</sup> had said, *quos suppuratos mitius habentes, sputorum graveolentiæ sequuntur eos recidiva occidit* ; “ they who are suppurated, and find themselves much better, and afterwards a foetid spitting comes on, die of a relapse.”

It does not seem very safe to be much conversant with persons in this stage of a consumption, for as the putrid effluvia of the saliva may be drawn in with the air into the lungs of the by-standers, there is danger that the contagion of the disorder should affect those who are free from it. Hence *Galen*<sup>k</sup> says, *periculosum præterea est consuescere his qui tabe tenentur, atque in totum cum omnibus qui putridum adeo expirant, ut domicilia, in quibus decumbunt graviter olent* ; “ moreover, it is dangerous to be much conversant with persons in a phthisis, and generally speaking, with any such persons whose breath is so foetid as to communicate an ill smell to the chambers where they lie.” And indeed, the youth of whom I have just made mention, infected his sister, and the maid, who attended him constantly in his disorder. *Tulpius*<sup>l</sup> confesses, that he was once desirous

<sup>i</sup> Coac. Prænot. N° 406. Charter. Tom. VII. pag. 876.  
<sup>k</sup> De Febribus, Lib. I. Cap. 111. Charter. Tom. VII. pag. 108.  
<sup>l</sup> Lib. II. Cap. 11.

rous to have examined what injury the lungs had suffered, in the body of a person dead of a phthisis; but adds, *deterruit a sectione fætor tabidus noxius fortè non minus medicis, quam ipsis consanguineis*; “ the  
 “ phthifical foetid smell deterred us from dissecting,  
 “ lest both the physicians and himself might have  
 “ been as much hurt by it as his relations had been.”  
*Bennet*<sup>m</sup> had seen in the bodies of phthifical persons, the lungs reduced to a kind of filthy dregs; whence, it is easy to conceive, how foul effluvia are exhaled by those spittings, which they call muddy or clayey. And *Bennet* remarks, that such kind of saliva is always more ponderous than any other: nay, although the spittle should not be so foetid, something amiss may be feared from the breath of persons dying of a consumption.

A man's wife, expiring of a consumption, giving him a farewell kiss, all that part of his chin which her lips had touched, remained ever after smooth, though the beard grew thick all around; however, this worthy man suffered no other harm thereby, but lived many years, without any signs of any disorder in the lungs.

Physicians are used also sometimes to throw what is spit up by consumptive persons on burning coals, and if it has a foetid smell while it burns, they prognosticate certain death near at hand. However, it is certain, that all spittle smells ill when it is burnt; which makes *Bennet*<sup>n</sup> account this prognostic not so absolutely certain; the greater or less stench of the spittle in burning, may indeed be a sign of a greater or less corruption of the humours. *Hippocrates*<sup>o</sup> accounted this bad smell a mortal symptom, but adds, *si & capilli a capite defluant*; “ if also the hairs fall off  
 “ from the head.”

*Aretæus*

<sup>m</sup> Tabid. Theatr. pag. 68.

<sup>n</sup> Ibid. pag. 44.

<sup>o</sup> Aphor. 11. Sect. V. Charter. Tom. IX. pag. 200.



*Aretæus* <sup>P</sup> acknowledges that there is an infinite variety of spittings in phthifical cases, and he enumerates many of them, and tells us, *omnes has formas & species esse*; “ they are all so many different forms and species of pus :” and then adds, *quicunque vero aut igne aut aquâ humiditates explorant, bi-  
aud ita multum phthoen mihi dignoscere videntur nam-  
que visio quolibet alio sensu certior est, non modo iis quæ  
ejiciuntur intuendis, sed etiam ægrotantis specie conside-  
randa: si quis enim vel plebeius hominem viderit, pal-  
ntem imbecillem, tussientem, macie confectum hunc verâ  
phthoe laborare pronunciat*; “ they who examine the humours excreted by water or by fire, do not seem to me, to take the best means for forming a diagnostic in a phthisis; for the sight is more to be depended upon than any other sense, whether we examine by it the matter excreted, or the appearance and habit of the whole body; for if even any common man shall see a person pale, weak, labouring with a cough, and emaciated, he will pronounce that he is phthifical.” But *Aretæus* does not seem to have considered, that physicians do not so much endeavour to find, by examining the spittle in water, or upon the fire, whether the patient has or has not a phthisis, but whether the disorder is likely to bring on death slowly, or soon, as is evident from the aphorism of *Hippocrates* just quoted.

The bursting of the vomica into the cavity of the chest.] A vomica may certainly burst in such a manner, as that the pus shall be effused into the cavity of the thorax; however, this happens but rarely in phthifical cases, and for the most part, the pus is discharged by spitting; but if such an effusion of pus into the cavity of the thorax, does take place, it is easy to see how little hope remains, when the lungs, already ulcerated, are besides deluged, as it were, with pus on every side. If an empyema be difficult of cure when the lungs are sound, what can be hoped when

the lungs are already injured; on this head we refer to what has been said in the chapter of the empyema.

Also a very laborious respiration.] Sometimes the lungs being almost consumed, as was said before few air-vessels remain, the pus is often collected in the bronchia, and the patient is too feeble to draw it out from thence by coughing; as Bennet expresses himself<sup>a</sup>, *aliquando dolor pectoris & papillarum pungens & ulcerosus inter tussendum exacerbatus vel & dolores tendens in decubitu dextro aut sinistra, ob pulmonum lateris alterutrius pleuræ adnascentiam*; “sometimes  
“pungent sore pain of the breast and nipples, which  
“is rendered more intense by coughing, or a tension  
“and pain when the patient lies down on  
“the right or on the left side, on account of the  
“lungs adhering to the pleura on either side,” suppresses all excretion by spitting, and almost stops the breath. The vomica, before it breaks, by pressing upon those vessels which are yet unobstructed, produces the same bad consequences, as we observed before, §. 836.

A consumption of all the blood, &c.] After an amputation of the breasts or limbs, so great a suppuration often comes on, that the patients waste away from this cause alone, although the viscera be quite sound; because all the nutritious juices of the body convert to pus, and issue with it through the extensive surface of the wound: if now there be a large ulcer on the lungs, and a great quantity of pus be discharged, the same consequence must necessarily follow; and so much the more, as all the blood of the body must pass through the lungs, and all the chyle, presently after it is mixed with the blood passes, together with it, through the blood vessels of the lungs; whereas, after amputations, only a part of the chyle and blood pass through the places from which the amputation was made: besides, we know from

<sup>a</sup> Tabid. Theatr. pag. 105.



from physiology<sup>r</sup>, that it is by the constant action of the lungs, that the chyle flowing through this viscus along with the blood, is formed into a nutritious juice, to supply the continual waste both of the fluids and of the solids in a healthy body. So that a phthifical patient wastes away from a double cause, that is to say, both from an effusion of the nutritious juices (flowing from the ulcer, together with the pus) and because the lungs being weakened by the disease itself, the preparation of a nutritious juice from the chyle is impeded. It often happens, that all the primæ viæ perform their functions well in phthifical patients; they have a good appetite, digest their food well, have regular stools, and yet receive no benefit; but the whole habit of body wastes away gradually, because the necessary action of the lungs upon the chyle is defective. This *Bennet* held for a very bad sign, and says, *cibum avidè appetentes & exinde robur neutiquam acquirentes desperati: nectar nim vitale deprædationi dicatum indicat*; “phthifical persons having an eager appetite, and not being the better or stronger for what they eat, are in a desperate case, for this shews that the disease preys upon and exhausts the vital nectar.”

An almost intire wasting of the solids, the *Hippocratic* countenance.] By copious purulent spitting, and by nocturnal sweats, the greatest part of the fluids of the body are exhausted; hence, all the vessels being no longer distended by the fluids, are contracted; all the fat on which the plumpness of the body depends is lost, so that the skin and bones seem only to remain; the action of the muscles however, still subsists, and the patients can use all muscular motions, as far as their great weakness will allow, and as far as the dryness of the ligaments of the joints is not a hindrance. I have seen a skilful musician, worn out and emaciated with a consumption, who, the day before his death, played on the harp-

sichord, and moved his fingers with great celerity. It is known, that the size and fulness of the muscles depends on the cellular membrane, interwoven between each bundle of muscular fibres ; now although all this cellular coat is wasted away, from the extreme emaciation of the patient, the muscular fibres still remain, and are capable of producing motion. Ovid<sup>s</sup>, in his description of famine, seems to have drawn a compleat image of a person in the last stage of a consumption.

— — — *Cava lumina, pallor in ore,  
Labra incana situ, scabræ rubigine fauces :  
Dura cutis, per quam spectari viscera possent :  
Ossa sub incurvis extabant arida lumbis :  
Ventris erat, pro ventre, locus. Pendere putares  
Pectus, & a spinæ tantummodo crate teneri.  
Auxerat articulos macies, genuumque rigebat  
Orbis, & immodico prodibant tubera talo.*

“ Sunk were her eyes, and pale her ghastly hue,  
“ Wan were her lips and foul with clammy glue ;  
“ Her throat was furr’d, her guts appear’d within,  
“ With snaky crawlings through her parchment  
skin ;  
“ Her jutting hips seem’d starting from their  
place,  
“ And for a belly was a belly’s space ;  
“ Her dugs hung dangling from her craggy spine,  
“ Loose to her breast, and fasten’d to her chine ;  
“ Her joints protuberant by leanness grown,  
“ Consumption sunk the flesh and rais’d the bone ;  
“ Her knees large orbits bunch’d to monstrous  
size,  
“ And ancles to undue proportion rise.”

Mr. VERNON.

*Arctæus*



*Aretæus* has most accurately described the wasting away of the whole body in a phthisis, where he also well remarks, *buccarum tenuia dentibus inhaereant & subridentibus assimilentur; in omnibus deinde cadaveris speciem referunt*; “that the thin part of the cheeks sticks to the teeth, and give the faces a grinning appearance; and that the patients look in all respects like a corpse.” Thence also, there is that appearance of the countenance called the *facies Hippocratica*, from the description which *Hippocrates* has given of it in his prognostics; which we mentioned before, §. 1188. when treating of the empyema.

But the body gradually decaying, extreme emaciation ensues; and if this be suddenly increased, it is a sign of near impending death, as *Bennet* has well observed; *pinnarum narium contractio, thoracis collapsi angustatio si brevi spatio contigerint, morituum ægro-tantem denuntiant*; “a contraction of the sides of the nostrils, the thorax collapsing and growing narrow on a sudden, shews that the patient is near death.”

A hectic fever with a low pulse, &c.] What it is that is called by physicians a hectic or habitual fever, we shewed on another occasion, §. 835. From *Galen*, a hectic is a fever which always keeps the same equal tenor, without any paroxysm, increase, or acme; without intensification or remission, so that the patient does not himself perceive that he is feverish. At the same time we there took notice, that *Galen* had observed some instances of a periodical augment of this fever, but thought the exacerbation in this case did not proceed from the nature of the fever, but from the taking of food, which when it had been digested and distributed through the body, this fever returned to its old state. In the beginning of a consumption, this fever is chiefly perceptible towards

L 3

evening;

evening; beginning sometimes with a slight shivering, and sometimes without any shivering; manifesting itself by the quickness of the pulse, increase of heat, and flushing in the cheeks; but in the morning the pulse is used to return to its natural state, and this gives this fever the appearance of a quotidian ague. *Aretæus* has remarked this, saying, *simul adest & ignis assiduus, qui nunquam intermittere videatur, interdum latens sudore & corporis frigore. Hæc enim propria phthoen sequuntur quod videlicet caliditas excitatur & in noctem emicat; interdum autem in visceribus delitescit;* “ a constant fire, or fever, lies  
 “ lurking in the body, which never seems to inter-  
 “ mit, but lying concealed in the day in sweat and  
 “ cold of the body; for this is peculiar to a con-  
 “ sumption, that the heat is raised and diffuses itself  
 “ at night, which in the day-time lies lurking in  
 “ the bowels.” But as the disease grows worse, *hecticus calor magis magisque increscit & pulsus etiam summo mane fertur citior;* “ the hectic heat in-  
 “ creases, and the pulse is quick even early in the  
 “ morning;” and then, *Hoffman* <sup>u</sup> tells us, there are very little hopes left. It is certain, that sometimes a real exacerbation, and a perfect intermission, have been observed in phthical cases; and *Hippocrates* <sup>w</sup> seems to have known this, for he says, *in suppuratis febres intermittentes plerumque sudoriferæ sunt;* “ in persons in whom pus is formed, inter-  
 “ mittent fevers are mostly accompanied with  
 “ sweat.” But it is most frequently observed, that a slight fever is constantly upon the patient, which grows somewhat more intense towards evening; but from time to time there are manifest exacerbations at different parts of the day, either from the pus being retained, or new chyle entering the blood after new aliment taken in; but when the lungs are obstructed with tubercles which suppurate successively, then as  
 each

<sup>u</sup> Medic. Ration. & System. Tom. IV. part. IV. pag. 308.  
<sup>w</sup> Coac. Prænot. No 419. Charter. Tom. VIII. pag. 876.



Each tubercle comes to a head, and is on the point of breaking, the vehemence of the fever is considerably increased; which abates again when the pus is discharged by spitting, till another tubercle suppurating, brings on another exacerbation. For this reason it should seem, that *Bennet*<sup>x</sup> says, *si ephemera vel hectica pervices inæquales phthisicum diutius, exaceruerit fatalem indigitant eventum*; “if an ephemeral fever, or a hectic coming on at unequal intervals, have long oppressed a phthisical patient, they indicate a fatal issue;” for this shews, that new causes of an increase of the fever frequently recur before the former cause is removed. But when the pus, in an ulcer of the lungs, becomes acrid and ichorous, or otherwise degenerates by lodging too long, and not being excreted by spitting, then the whole blood is infected with an acrid and putrid taint, and a putrid malignant fever comes on, which soon destroys all the strength which remained, and kills the patient. *Bennet*<sup>y</sup> having observed these disorders, says, *phthisici quibus materia pectus onerans labem febris putridæ aut malignæ contraxerit, omnes fere periere*; “almost all those in whom the matter which oppresses the breast produces a putrid malignant fever, die.”

*Galen*<sup>z</sup> gives it as a rule, that the pulse in phthisical persons is low and languid, soft and moderately quick; this is chiefly the case in the first stages of the disease, but when the habit of the body begins to waste away, then a slender, hard, indistinct, and quick pulse, accompanies the hectic; as *Galen*<sup>a</sup> has excellently remarked in another place, after he had first accurately painted the wasting of the whole body in a phthisis. At the same time he observes, that when the physician first feels the pulse, the heat ap-

L 4

pears

<sup>x</sup> Tabid. Theatr. pag. 111.<sup>y</sup> Ibidem, pag. 112.<sup>z</sup> De Pulsibus ad Tyrones, Cap. xii. Charter. Tom. VIII. pag. 10.<sup>a</sup> De Febribus, Lib. II. Cap. x. Charter. Tom.

VII. pag. 120.



pears moderate; but if he keeps his hand on the pulse a considerable time, a kind of sharp biting heat is perceived; sometimes the patients have a troublesome sensation of heat in the palms of their hands. Why the heat is more vehement towards the upper parts of the body, and why there is a flushing in the cheeks, was explained §. 835.

An inconceivable anxiety, &c.] When we treated, §. 631. concerning the febrile anxiety, the cause of the anxiety was shewn to be an obstruction of the passage of the blood through the extremities of the pulmonary artery; but in phthifical cases, where this viscus is either gradually consumed, or filled with pus, this obstruction also takes place; and in a greater degree, as the disease makes nearer approaches to death; the unhappy patients complain of no grievance more, nor more earnestly desire the help of art for any thing, than to gain some relief from this distressing symptom; and their oppression increases towards evening, because the spitting grows less at that time, and the fever is heightened; and the faster the blood moves through the obstructed vessels, the more this anxiety increases. If a healthy man augment the velocity of the motion of his blood by running, an anxiety arises, because the lungs cannot give passage to the blood so fast as it is brought by the veins to the right ventricle of the heart; hence, unless the velocity of the blood were slackened again by rest, sudden death would follow, as indeed frequently happens to men and beasts who run beyond their strength; but in the morning, when the fever grows milder, and the saliva collected and concocted during the night is spit out, consumptive patients grow something better.

Great thirst, profuse night sweats.] It was shewn heretofore, §. 636. when we treated of feverish thirst, that dryness, and an obstructed passage of the humours, were accounted with reason causes of thirst; and we have seen in our observations on the phthisis, that



that the whole body is dried up; and the anxiety  
 shews, that the fluids find great difficulty in passing  
 through the vessels of the lungs; and at the same  
 time the putrid taint of the blood rendering it acrid,  
 this is another cause of thirst: add to these the  
 sweating in the night, which dissipates the most fluid  
 part of the blood, from which cause alone thirst will  
 be produced, even in healthy persons. Concerning  
 these night sweats, the reader may look back to the  
 comment on §. 835.

Red pustules, &c.] While so much of the thin-  
 ner fluid is drawn off by sweat, it is not strange the  
 thicker part should stop in the narrow pores of the  
 skin, and thus produce pustules. In healthy persons  
 these pustules are observed in very hot weather; how  
 much more may this be expected in consumptive per-  
 sons, in whom the pores, for want of moisture, are  
 less pervious, and the humours acrid; on the same  
 account an itching prevails. *Bennet* reckons among  
 the signs of an incurable consumption <sup>b</sup>, *extremarum*  
*partium & totius cuticulæ porrigo, deficiente in exteri-*  
*oribus spiritu madente*, “a scurf of the extremities  
 “and on the skin, the moisture failing in the ex-  
 “ternal parts.” And *Hippocrates* <sup>c</sup> had said before,  
*pustularum eruptiones velut unguibus lacerata cute* (τὰ  
*ἀνυχώδεα ἐξανθήματα) habitus tabem significant*; “erup-  
 “tions of pustules appearing like scratchings of  
 “nails upon the skin, indicate a wasting of the whole  
 “habit;” by which is meant a consumption in its  
 last stage. But in another place <sup>d</sup> we read, *prurigi-*  
*nosæ corpora post alvum suppressum, in tabidis malum*,  
 “itchings after costiveness are a bad sign in con-  
 “sumptions:” for by the diarrhœa a great quantity  
 of the more acrid humours is drawn off; but if this  
 be suppressd, either of its own accord through the  
 weakness of nature, or by remedies, then this itching  
 and these pustules succeed.

From

<sup>b</sup> Tabid. Theatr. pag. 105.  
 Charter. Tom. VIII. pag. 878.

<sup>c</sup> Coac. Prænot. N<sup>o</sup> 444.  
<sup>d</sup> Ibidem, N<sup>o</sup> 440.

From the pus being mixed with the blood as it flows through the ulcerated lungs, the whole blood is corrupted, and the crasis of the fluids is so broken down, that they issue from the body in great quantities by a colliquative sweat; but when the vital powers grow weaker and weaker, and at the same time the most fluid part being dissipated by sweat, the remainder of the fluids is more viscid, then the humours arising at the skin find more difficulty in passing through it, and raise upon the epidermis here and there watery pimples, which are like whitish miliary eruptions, except that for the most part they rise to be much larger. Nor was *Hippocrates* ignorant of this symptom, as we observed on another occasion, (§. 835.) when we treated of the signs which shew a concealed abscess in the lungs; for in his *Prognostics*<sup>e</sup>, after he had said, *oculi cavi fiunt, malasque rubores ob-*  
*sident, & ungues quidem manuum adunci fiunt, digiti*  
*autem manuum incalescunt maximè summi, & in pedibus*  
*tumores fiunt & cibos non appetunt;* “the eyes grow  
 “hollow, and flushings come upon the cheeks, and  
 “the nails of the hands grow crooked, and the  
 “fingers grow hot, especially at the tops, and the  
 “feet swell, and the patient loses his appetite;” and  
 lastly he adds, *& phlyctænæ per corpus nascunt,* “and  
 “pustils (*φλύκταιναι*) break out upon the body;” that  
 by *phlyctænæ* he means watery pimples, is manifest  
 from what has been mentioned (§. 723.)

A swelling of the feet and hands on the affected side.] In the last stage of a consumption, and when death is approaching, this is observed, that when the body is in the most emaciated state the hands and feet begin to swell. *Bennet*<sup>f</sup> says with good reason, in  
*phibisi diuturniori pedum tumor œdematosus funestus,*  
 “in a consumption which has lasted a long time, an  
 “œdematous swelling of the feet is a mortal symp-  
 “tom.” Hereafter, in treating of the general  
 causes of a dropsy, it will appear, that whatever hin-

ders,

<sup>e</sup> Charter. Tom. VIII. pag. 651. <sup>f</sup> Tabid. Theat. pag. 111.



ders, in any degree, the free return of the lymph through the veins to the heart, may occasion a dropical swelling. Now in the last stage of a consumption, the extreme anxiety shews, that the blood coming from the right ventricle of the heart moves with difficulty through the lungs; whence there is a resistance to the motion of the blood through the veins to the heart; and thus also the re-absorption of the lymph becomes more difficult: and as at the same time a small quantity of blood moves through the arteries, as the weak pulse shews, nor can the action of the arteries next the veins promote the motion of the fluid in the veins; wherefore the lymph will begin to stagnate, and to be collected in the parts the most remote from the heart; whence will ensue a cold tumour of those parts, but soft also, on account of the scarcity of moisture in the body, already drained of its juices. Hence also we see by *Bennet* <sup>g</sup>, *phthisis improviso fatigans licet pectus minus gravet, cum extremarum partium, pedum præcipue, inevitabili infrigidatione, periculosissima, succi enim alibilis pessime alienati, viriumque exinde prostratarum, symptoma est*; “a phthisis, accompanied with a sudden lassitude and faintness, and also with a coldness of the extremities, especially of the feet, is exceeding dangerous; for this is a symptom of a great depravation and exhaustion of the nutritious juices, and of loss of strength from thence.” Hence also the reason is plain why *Hippocrates* <sup>h</sup>, describing the progress of a consumption, says, *in progressu vero corpus extenuatur, exceptis cruribus: hæc autem tument & pedes*; “in the progress the body is emaciated except the legs, but these and the feet swell.”

Whether experience confirms what some would conclude from the words in the text, that if the left lobe of the lungs be consumed by an ulcer, the left hand and foot swell before death; and *è contra*, if the right lobe

<sup>g</sup> Ibidem, pag. 110.    <sup>h</sup> De Intern. Affect. Cap. 11. Charter. Tom. VII. pag. 64.

lobe be affected, I confess I know not; at least I have never seen it in the patients whom I have attended, nor do I remember to have found it in good writers, that this has been observed by others.

Great weakness, hoarseness, &c.] The fluids and solids of the body are daily altered by the hectic and worn away, and exhausted from the body by spitting and sweats, and are not re-supplied, from whence extreme weakness follows. The hoarseness of the voice is chiefly caused by the dryness of those parts, which are the instruments in forming and transmitting the voice.

Falling off of the hair.] The hairs arise either from a small bulbous root fixed in the cellular membrane, or from the sebaceous follicles of the skin; in healthy men, at the flower of their age, they are always oily; and when through age, or by some very acute disease, the fat of the body is consumed, and the skin grows very dry, the hairs fall off: but if the bulbous roots remain unhurt, and the former plumpness of the body be restored by good diet, they grow again; as has been observed in those, who in the prime of life have been seized with acute disorders, and escaping from them have had their hair fall off. But as they may be cut or burnt without any pain, and when cut grow again, and springing afresh from their root planted in the fat, pierce through the skin. Hence Galen<sup>i</sup> says, *generatio pilorum eadem est ac illorum quæ a terrâ nascuntur*, “the growth of the hair” is like the springing of vegetables from the earth.”

It is not strange, therefore, as in the last stage of a consumption scarce any fat remains, and the skin is quite dry, that the hairs should fall off; and this Hippocrates<sup>k</sup> accounts a symptom of impending death: *Huic si jam capilli ex capite defluant caputque velut ex morbo jam nudetur, & super prunas exspuente graviter sputum*

<sup>i</sup> De Composit. Medicament. secund locos, Lib. I. Cap. 1. Charter. Tom. XIII. pag. 319. <sup>k</sup> De Morbis, Lib. II. Cap. XVII. Charter. Tom. VII. pag. 569.



*sputum oleat, tunc intra breve tempus perituum asserito, & quod enecet alvi profluvium fore:* “If the hairs of such a person fall from the head, and the head is as it were made bald by the disease, and the saliva thrown on coals has a foetid smell, be sure he will soon die, and that a diarrhoea will carry him off.”

He makes a like prognostic in the *Prænotiones Coacces*<sup>1</sup>, as also in the Aphorisms<sup>m</sup>; and all subsequent physicians have confirmed this presage: for although phthifical persons before this had profuse nocturnal sweats, yet when the skin being dried the hairs fall off, the humours are driven inwards, and, being dissolved by a putrid depravation, rush to the intestines and bring on a most foetid diarrhoea, which soon puts an end to the disease and life together. Hence *Aretæus*<sup>n</sup>, after describing most accurately the extreme emaciation of persons in the last stage of a consumption, adds, *si talibus ægris alvus perturbetur desperatum*; “if the belly grow loose in such patients, the case is desperate.”

Sometimes, although less frequently, it happens that white fæces like chyle are excreted, which is a most fatal presage, as in this case all kind of nourishment is drained from the already exhausted body. *Bennet*<sup>o</sup> observed this, and tells us, *si phthisis diu detinuerit & fluxus chylosus supervenerit, funestum*; “if after a consumption has lasted a long time a diarrhoea comes on, which evacuates the chyle from the body, this is mortal.” We read in *Cælius Aurelianus*<sup>p</sup> what follows, *tunc pejorante passione ventris efficitur fluor albidarum egestionum & indigestarum, debilitatis naturalibus officiis*; “then the disease growing more desperate a flux of the belly ensues, bringing away white fæces and indigested food, the natural organs of digestion being weakened.”

And

<sup>1</sup> N<sup>o</sup> 434, 436. Charter Tom. VIII. pag. 877. <sup>m</sup> Sect. V. Aphor. 11, 12, 14. Charter. Tom. IX. pag. 200, 201, 202. <sup>n</sup> De caus. & sign. morb. Lib. I. Cap. viii. pag. 37. <sup>o</sup> Tabid. Theatr. pag. 111. <sup>p</sup> Morb. Chron. Lib. II. Cap. xiv. pag. 421.

158 Of a PHTHISIS PULMONALIS. Sect. 1206

And that we are to understand, that such a flux comes on after the disease has lasted a great while, is plain from what went before ; *digitorum summitates crassescunt obuncatis unguibus, quod Græci γρυπώσω vocant, sequitur præterea inflatio pedum & nunc frigus nunc fervor articulorum : nasi summitas pallescit, atque aurium laminae frigescunt ;* “ the ends of the fingers grow thick, and the nails grow crooked : (this the Greek call γρυπώσις,) then follows a swelling of the feet, “ at one while cold, at another hot, in the fingers “ and toes : the tip of the nose grows pale, and the “ lobes of the ears grow cold.” Now all these symptoms in a consumption foreshew approaching death.

When this fatal diarrhœa comes on, and sometimes a little sooner, the spitting, which was copious before, begins to be suppressed, and a great anxiety ensues ; and if the spitting be not restored, by means of a warm diluted drink sweetened with honey, a fatal diarrhœa soon follows. Physicians endeavour to promote the spitting, and by giving warm oxymel to raise a cough, in order to remove the oppression from the lungs ; but the efforts of their art are frequently vain, as Bennet<sup>a</sup> also tells us, *phthisi diutius correpto, si βηχίνα tenuoras substantiæ sive proritantia, porrecta fuerint & exinde tussis non moveatur funestum ;* “ when persons have long been consumptive, that thin drinks designed to excite a cough, “ and no cough is excited, death ensues.”

Such is the progress of this most dangerous disease, which destroys so many men in the flower of their age. This progress Hippocrates<sup>r</sup> has briefly, as he is wont, but accurately, thus described ; *a sanguinis sputo puris sputum malum. A puris sputo tabes & fluxus. Ubi autem sputum sistitur intereunt :* “ after spitting of blood, spitting of pus is a bad sign. “ After spitting pus, comes on a wasting and a diarrhœa.

<sup>a</sup> Tabid. Theatr. pag. 112.  
Charter. Tom. IX. pag. 299.

<sup>r</sup> Sect. VII. Aphor. 15, 16.



“arrhœa. When the spitting stops, the patients  
“die.”

In the next aphorism follow some general rules of great use in forming a prognostic in this disease.

## S E C T. MCCVII.

1. **A**N hereditary phthisis is the worst of all, and not to be cured, but by preventing the hæmoptysis.

2. A phthisis arising from an hæmoptysis, which was occasioned by external violence, no internal cause pre-existing, is the least dangerous, *cæteris paribus*.

3. Such a phthisis (2.) in which the vomica soon bursts, and the patient spits out easily pus, which is white, digested, smooth, answerable in quantity to the size of the ulcer, without thirst, the appetite and digestion remaining good, and the secretions and excretions as in health, may be cured, although with difficulty.

4. A phthisis caused by an empyema is incurable.

5. Matter spit out which is heavy, solid, fœtid, sweet-tasted, with the signs §. 1206. shews the case to be desperate.

Mention was made §. 1198. of an hereditary phthisis; and then it was made evident, how very great reason there is to fear that persons should be attacked by this disease, when there is cause to suspect an hereditary tendency to it; for if a person so situated should once be taken with a spitting of blood, we might safely apply to him the poet's words<sup>s</sup>.

*Non*

<sup>s</sup> Ovid. Epist. ex Ponto, Lib. I. Epist. 3.

*Non est in medico semper relevetur ut æger,  
Interdum docta plus valet arte malum;  
Cernis & e molli sanguis pulmone remissus,  
Ad stygias certo limite ducat aquas.*

“ Tho’ skilfully the sage perform his part,  
“ Disease oft triumphs o’er the healing art :  
“ The lungs oft bursting in the fatal strife,  
“ Pour forth the purple stream, and let out life.”

The only hope of safety lies in preventing any hæmoptysis, which is to be apprehended in such persons, sometimes as soon as 16 years old, although it does not often come on before 18. If a cough with a defluxion (which may be left to itself frequently in other persons, without danger,) arises in persons so disposed, all efforts must be used to allay this, lest the weak vessels of the lungs, being lacerated by the vehemence of the cough, an hæmoptysis should ensue. *Boerhaave* preserved the heir of a very noble family, in which this disease was hereditary, by prescribing a proper regimen and diet, and diminishing the quantity of blood, by bleeding thrice a year. Nay, there may be hope by such means to extinguish this hereditary taint in families, of which I have seen a remarkable instance. A robust healthy man married a beautiful young lady, in whose family this disease was hereditary, of which disease she (as well as the rest of her brothers and sisters) died before she was 30. Of this marriage were born four children, who although the father was healthy, and lived to upwards of 80, were all attacked with this disease. Three died of a true phthisis, the fourth and last, terrified by the fate of the rest, prevented, by timely bleeding, the hæmoptysis; and when he was past 36, and by some prudent friends was advised to leave off bleeding, he would not be persuaded: nay, he rather repeated it more frequently, and had a greater quantity



quantity of blood taken from him at each time, thinking he might, by that means, more safely indulge his genius; whence, becoming dropfical from too great a loss of blood, he died about forty. He had children of a robust healthy wife, who is now alive, and upwards of 70 years old, some of whom died of childrens disorders: one of the daughters died past 30 in child-bed, the two others are yet alive, and have never been afflicted with any disorder in the lungs, through a course of years more numerous than those of their father's life; and happy in a strong healthy offspring, of whom some are grown up to manhood perfectly well. From this instance it appears, that there may be hopes of extinguishing even an hereditary taint, if the hæmoptysis be prevented: at the same time we see, that although a consumption in its worst state is infectious, yet the hereditary taint of the wife did no injury to the husband.

Bennet<sup>t</sup> has observed, that an hereditary phthisis is slower in its progress: he says, *qui indelibilem impressionem a parentibus susceperunt licet, irrestituibiles sunt tamen diuturniores*: “they who have received an inevitable disposition to this disease from their parents, although irrecoverable, yet are longer before they die of it than others.”

2. It was said before, §. 1198. that an hæmoptysis, occasioned by external violence to the lungs, is much easier of cure, than if an hæmorrhage from the lungs be caused by the erosion of the vessels: for in the first supposition, the humours are found, and the disorder may be considered as a simple wound, which there are hopes of consolidating. It is indeed, true, that the constant motion of the lungs in respiration, and the necessary free access of air, make it difficult for wounds of the lungs to close without any suppuration; so that this is more to be expected than in external wounds, where, by surgery, the lips

of the wound may be brought and kept close together, and the air be excluded. In the mean time if a phthisis begin to arise after such an hæmoptysis it may be considered as a topical disorder, which has neither a cacochymia preceding it, nor an idiosyncrasy conspiring with it: therefore all other things being equal, a phthisis arising from such an hæmoptysis will be less dangerous than other kinds, which owe their origin to more pernicious causes; yet neither is such a phthisis as this without danger, and will be shewn under the next head.

3. Before, when we treated of a true peripneumony, it was observed, that if this disease terminated in forming a vomica, all means should be tried to make it burst speedily, that the pus, being effused into the bronchia, may be evacuated from thence; for this would be the only hopeful method of first cleansing, and afterwards consolidating, the ulcer; for, unless the vomica can soon be brought to burst, its size will increase, if it compress and obstruct the neighbouring parts, and the whole viscus will be eroded by pus long retained, and thereby rendered acrid; so that if a vomica follow upon an hæmoptysis, occasioned by external violence, and this vomica burst soon, there are hopes of a cure; which will be greater, if laudable pus be discharged, by spitting with ease, and without so vehement a cough as may, by the agitation of the lungs, irritate the ulcerated place, and so prevent the closing of the wound. But, in order to form a more certain prognosis, we are to consider, whether the quantity of pus discharged is answerable to the size of the ulcer; for if this be the case when a vomica soon breaks, that is a sign that it could not contain a very great quantity of pus; and after the whole quantity of pus is discharged from it, at the time of its breaking, the quantity of pus spit out diminishes gradually, day by day, if the affair is likely to turn out well; as manifestly appears in purulent tumours of the  
externa



external parts, which are subject to inspection: for if a greater quantity of purulent matter flows out than is proportionate to the size of the ulcer which is opened, the surgeons know that the wound is fistulous, or that the vitious humours flow to the sore, either of which causes render the cure of an ulcer difficult, and still more, if this ulcer be in the lungs.

Bennet <sup>u</sup> has well remarked this, when he says, *si partem derosam fluxio copiosior irrigaverit, & frequentior periculosum, nam ulcera interna cum uberrima saniei affluvie raro, sicut externa difficillime sanantur*; “ if

“ there be a copious and frequent defluxion on the  
“ ulcerated part, there is danger; for internal ul-  
“ cers with an afflux of corrupted humours are scarce  
“ ever cured, and external ulcers with great diffi-  
“ culty.” On the supposition that nothing amiss

internally causes the disease, it is plain, that there will be no vehement thirst, and that the primæ viæ perform their functions well, so as to prepare proper chyle from the food. But we know that the action of the lungs is a principal means of forming good blood, and other juices from the chyle, so that of necessity the lungs must remain so far uninjured, as to be capable of performing their office; and we know that this is the case, if the plumpness and vigour of the body do not decrease, but are rather augmented. In the foregoing paragraph it was said, that it was deservedly thought a very bad sign, if a phthical patient has a strong appetite, and yet continues to grow thin; for then we certainly know, that the lungs fail in performing their functions.

The prognostic which we read in Hippocrates <sup>w</sup> on this head, is very accurate; *de tabescentibus, quod ad sputum & tussim attinet, eadem dico quæ de suppuratis scripsi; oportet enim eum qui liberari volet, facile sputum per tussim rejicere, & id esse album, & æqualem & ejusdem coloris, absque pituita quod vero a capite deflux-*

M 2

it,

<sup>u</sup> Tabid. Theatr. pag. 110.      <sup>w</sup> Prædict. Lib. II. Cap. vi.  
Charter. Tom. VIII. pag. 814, 815.

*it, ad nares divertī febrim autem non invadat ut ne a  
cæna prohibeatur. Venter autem egerat quotidie, & id  
quod egerit, sit durum, copia pro ratione ingestorum.  
Hominem vero quam minime tenuem esse oportet pectus  
autem laudare convenit, quadratum & hirsutum, &  
cartilago ejus parva sit, & robuste carnosā. Quicum-  
que enim hæc omnia habuerit maxime superstes erit. Qui  
vero nihil horum habuerit, interitui proximus;* “ with  
“ regard to phthifical persons, as to what belongs to  
“ the spitting and cough, I say the same things as I  
“ have written concerning those who have an ab-  
“ scess: for it is necessary, in order to being per-  
“ fectly freed from the disorder, that the patient  
“ should spit easy with his cough, and that what he  
“ spits should be white, smooth, and of one colour,  
“ without phlegm; (so I think the word ἀφλεγμάντων  
“ is best rendered) and that the defluxion from the  
“ head should be derived on the nostrils, and that  
“ no fever should come on, no, not in the evening:  
“ he should have stools every day, and the stools  
“ should be hard, and answering in quantity to the  
“ quantity of food. The man should not be much  
“ emaciated, the breast should be broad, and having  
“ the cartilage not prominent but brawny and fleshy  
“ (for the cartilages of the ribs stick out in emaciated  
“ persons.) Persons in whom all these appearances  
“ unite, are likely to recover; they who have not  
“ any of them, are very near death.” But although  
in such a consumption as has been just described,  
there are hopes of a cure, the physician should al-  
ways remember there is still some danger, and that  
such a disorder cannot easily be removed. Hereto-  
fore, when we treated of the cure of an hæmopty-  
sis, we saw how great care the ancients advised to be  
taken to prevent the inflammation of the lacerated  
vessel, lest the suppuration ensuing, should make  
the cure difficult and uncertain: and truly, unless  
the cough be gentle, and the evacuation of the pus  
by



by spitting easy, we may well say with Galen <sup>x</sup>, *quæ potest tussientibus esse sanationis spes? Non igitur quod in perpetuo, propter respirationem, motu viscus id sit, desperata curatio est, velut qui ante nos medici senserunt, sed propter saniei & puris evacuationem. Ideoque, si statim quis sit aggressus, ac jam dictâ ratione medeatur, coeunt si phlegmone prius occuparit, difficilem incertamque curationem recipiunt; nam pus & sanies prorsus totaque ex spatiis pulmonum non expelluntur & tussis affectas partes lacerat valde; “ what hope can there be “ of a cure? The cure is not therefore so desperate, “ as physicians were of opinion formerly, because “ the lungs are in perpetual motion, to draw in “ and let out the air, but because of the discharge “ of sanies and pus. If therefore, immediate care “ be taken, and such remedies applied, as have been “ mentioned, the wound closes; but if an inflam- “ mation is begun, the cure becomes uncertain and “ difficult; for the pus and sanies are not entirely “ cleared away from the lungs, and the cough la- “ cerates very much the injured parts.” Aetius <sup>y</sup> makes the like observations, and also very justly remarks, that these evils mutually cause and are caused, and succeed one another, as it were, in a circle; as the ulcer irritated by the cough at last is inflamed, this inflammation brings on a gathering and ripening of pus, and the pus so ripened must again be thrown off by a cough, on account of the cure being so difficult. Bennet <sup>z</sup> admonishes as thus, *primis valetudinis signis allucentibus non confidat medicus, etiamsi accurata videatur* *τενάρις*; *ultra enim convalescentiæ statum ob recidiuæ metum diu perstitisse, tutissimum*; “ that the physician “ should not trust too much to the first gleam of hope “ of health, which breaks out in this disorder, altho’ “ the good symptoms appear ever so determinate; “ for it is safest to persist in caution and care a long “ time*

M 3

“ time

<sup>x</sup> Method. medend. Lib. V. Cap. viii. Charter. Tom. X. pag. 116. <sup>y</sup> Lib. VIII. Cap. lxxvii. pag. 88. in Græca Editione, pag. 174. versa. <sup>z</sup> Tabid. Theatr. pag. 121.

“ time after the patient is recovered, for fear of a  
 “ relapse.” At the same time we see from hence  
 why physicians always endeavour to allay the trouble  
 some cough in phthifical patients.

4. When the pus effused into the cavity of the chest  
 floats about the lungs on every side, they consume  
 entirely, and no hope is left; as was shewn before in  
 the section of the empyema, and in the preceding  
 paragraph.

5. It is certain, that in all disorders of the breast the  
 matter spit out deserves to be attentively considered  
 for the excretions come directly from the lungs a  
 vital viscus, they are derived from the blood of the  
 whole body, which all passes through the lungs  
 hence the saliva is carefully examined by physicians  
 in a pleurisy and in a peripneumony, as it shews the  
 genius and the various changes of the disease. But  
 in a phthisis, when a vomica bursts and pours forth  
 its contents, the matter spit out is to be compared  
 with good pus, and that is best which has most of  
 the same qualities; the more it recedes from these  
 qualities either in colour, smell, taste, or consistence,  
 the worse it is.

We spoke in the preceding paragraph of dense,  
 weighty, foetid, and sweet-tasted spittle, and shewed  
 what prognostics were to be drawn from these va-  
 rious kinds of spittle in this disease; one thing only  
 remains to be noted. In an external abscess, which  
 is exposed to sight, we see, if it be pierced, that  
 there comes out pus, sometimes bloody, sometimes  
 like a thin foetid ichor, and quite deprived of the  
 qualities of laudable pus; and this happens chiefly if  
 the abscess has been kept closed too a long time, and  
 the pus has degenerated merely by being pent in too  
 long. Skilful surgeons prevent this depravation of  
 the pus by opening the abscess as soon as it is ripe,  
 and giving a vent to the collected pus. But it is ob-  
 served, that although the first pus which appears,  
 when such an abscess is broke or pierced, be bad, yet  
 it



it mends every day, and soon acquires all the qualities of laudable pus. In a vomica of the lungs, which often remains close a long time, the same thing happens to that, although the pus which first issues from a vomica when it breaks should be of the bad kind; this is not always a fatal symptom, for there are still hopes of a cure, if the quantity be diminished, and the qualities grow better on the following days; wherefore our text very prudently adds, that the case is desperate, when the last signs mentioned in the preceding paragraph accompany such a bad kind of spittle. *Bennet*<sup>a</sup>, who has so carefully collected every thing that relates to this disease, says, *si artis adminiculo sputum variegatum fit concolor, si à fœdato optime depuratum, si ab inæquali optime subactum, si à salino insipidum, si à fœtente inodorum, si denique facilius provenerit, sanitatis futuræ indicio est*; “ if, by the  
 “ help of art, various coloured matter spit out be-  
 “ come of one colour; thick foul matter be made  
 “ pure; unconcocted, concocted; saltish, insipid;  
 “ foetid, void of smell; and lastly, if it be excreted  
 “ with less difficulty, this is a sign of recovery:”  
 for then the same thing happens in a vomica of the lungs which has burst, as in an external abscess, when the ulcerated place is cleansed and begins to be disposed to heal up. It should be however remarked, that surgeons are careful, by plaisters and bandages, to keep the air from coming to an external abscess; whereas this cannot be done with regard to a vomica of the lungs, so that pus which was good at first sooner is depraved by being retained, and afterwards is excreted under the form of a bad kind of saliva: whence *Bennet*<sup>b</sup> had good reason to observe as follows; *si interdum sputa semper depurata projiciantur, licet noctu male colorata & constituta videantur nil desperandum; de die etenim sputa bene subacta & alba sanitatem reducem pollicentur*; “ if in the day time good matter  
 “ be spit up, although the colour and other qualities  
 M 4 “ of

<sup>a</sup> Tabid. Theatr. pag. 112.<sup>b</sup> Ibidem, pag. 122.

“ of what was spit up by night be bad, the case  
 “ not desperate; for well concocted white matt  
 “ being spit up by day promises recovery.”

## S E C T. MCCVIII.

**W**HEN a vomica is once formed in the lungs, the medical indications are to ripen and bring it to break as soon as possible which end is to be effected by a milk diet riding on horseback, tepid steams and expectorants. When it is burst, then

1. To guard the blood against the putrid taint.

2. To evacuate the pus from the ulcer and cleanse the lips of the wound, and to consolidate it.

3. To take such aliments into the body as require small force to make them flow through the lungs, and be assimilated there, and yet fit to promote nutrition, and not contribute to form more pus.

When we treated of the true peripneumony, we spoke of the disease sometimes terminating in a suppuration and consequent vomica of the lungs, which must also be ripened as soon as possible, that it may speedily burst; concerning which see §. 836. and 857. for the indications and remedies are the same. The only difference to be observed is, that for the most part a vomica of the lungs which follows a peripneumony is of a larger size, and when it breaks discharges a large quantity of matter all at once: but those which are formed after an hæmoptysis are often much smaller, and consequently a less quantity of pus is discharged; for sometimes the lungs are ob-



tructed with many tumours of this kind, which do  
 not suppurate all at once, but successively, as was said  
 before.

1. Mention was made heretofore in the comment  
 on the 406th aphorism, of the fatal evils which may  
 follow if the pus should be re-absorbed into the blood,  
 and flow with the humours through the vessels. It  
 is true indeed, that these are less to be feared, when  
 the vomica being broken there is a free issue for  
 discharging the pus from the body. Indeed, in ex-  
 ternal abscesses, although they happen to be very  
 large, and discharge a great quantity of pus after  
 they are opened, there are almost certain hopes how-  
 ever of a cure: but the case is quite different in an  
 ulcer of the lungs; for the blood of the whole body  
 is driven through them from the right ventricle of  
 the heart with a rapid motion, and flows by the ul-  
 cerated part: whatever is absorbed by the mouths of  
 the veins on the surface of the ulcer, passes quickly by  
 a short passage to the left ventricle of the heart, and  
 after that is carried along with the blood, circulating  
 through the aorta to all the parts of the body; for  
 the pulmonary veins are soon emptied, so that a  
 readier occasion is afforded for re-absorption; from  
 whence the reason is evident, why there is more dan-  
 ger of a purulent infection of the blood from an ul-  
 cer in the lungs than any where else. It seems  
 scarcely possible to hinder this re-absorption entirely,  
 but we may try by art to cleanse the blood from what  
 has been thus re-absorbed; and this is soonest done by  
 such remedies as resist the depravation and corrup-  
 tion of the humours, and which we shall mention in  
 the next paragraph.

2. These are the general indications and methods  
 in curing all kinds of ulcers, as was amply men-  
 tioned §. 411. for in order to cure an ulcer, we must  
 reduce it to the condition of a simple wound, before  
 there can be any hopes of consolidating it properly.  
 But it is easy to perceive that this is more difficult to  
 be

be effected in an ulcer of the lungs, as we can neither discern with our eyes the successive changes the ulcer, nor can have access to it with our hands to apply topical remedies, which shall act on the ulcerated part only. If, for instance, the face of an external ulcer be foul, and the lips callous, so as to need strong depurating remedies, or even corrosives we may safely use such applications, and guard the neighbouring parts in such a manner, as that they shall not be injured thereby; but this cannot be done in an ulcer of the lungs, because every thing taken by the mouth must circulate with the blood all over the lungs; and whatever is drawn in in the form of a steam, touches the whole aerial cavity of the lungs as well the sound as the ulcerated parts. We may know indeed by the matter spit out, as it recedes more or less from the qualities of laudable pus, the condition of the ulcer in some measure: but when the vomica be changed into a fistulous ulcer, which sometimes happens, as appears from the observation of *Galen* and others, it appears sufficiently how difficult the cure is, as neither the narrow orifice of such a fistula can be dilated, nor the callosity which often exists there can be removed; which however (as we shall see in §. 1210.) must be done, in order to the cleansing and consolidating the ulcer.

3. In the comment on §. 192. and following aphorisms, the diet was described, which is necessary for wounded persons, for restoring lost substance and consolidating what is separated; and the nourishment was advised to be composed of such things as were mild so soft as to be digested without labour, and yet not apt to grow putrid. At the same time it was observed, that skilful surgeons would easily discover from the condition of the wound, whether any considerable error had been committed in diet. But in order to consolidate an ulcer of the lungs, we must first bring it to a condition of a recent wound; and therefore the same rules obtain in this case, only

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much greater degree of caution is here necessary ; only such a portion of chyle comes to the other parts of the body, as corresponds with the proportion that part of the rest of the body ; but all the chyle comes to the lungs before the action of the arteries has subdued and assimilated it, and while it yet retains many of the qualities of the crude aliment. This is the reason why food of easy digestion is here commended to be taken in small quantities at a time, and often, lest the diseased lungs should be overpowered by too large a quantity of chyle flowing upon them at once. For this reason *Hippocrates* says, *tabidis cibaria non multa sunt exhibenda simul neque sopia plura, quam cibaria frumentacea ; & vino diluto inter cibos utendum, ne calefaciat & corpore debiliorem exhibeat, & utraque simul eodem tempore calefaciant & calore multum fluxionem inducant* ; “ much food is not to be given at once to phthifical patients, nor many dishes, and chiefly of food prepared from corn ; and his wine should be diluted with water, lest it bring on a fever in a weak body, and by the heat increase the defluxion :” for as soon as chyle, offending by its viscosity, or by its too great quantity, is to pass through the lungs, there is a danger, lest it should begin to lodge in the vessels which surround the surface of the ulcer, and should obstruct them ; and lastly, should excite a slight inflammation in the mouths of the vessels which open into the cavity of the ulcer, and to form a slough there, which must be separated by an increased suppuration, and thus the cleansing of the ulcer and the consolidating afterwards, be impeded. This is manifest in external ulcers, if they be at all considerable ; for upon errors in diet the bottom of the ulcer begins to grow dry, and to look of a deeper red, and discharges but little pus : but the next day the quantity of pus is increased, and this new suppuration by degrees separates

rates the slough, raised by the obstructed and inflamed extremities of the vessels which open into the bottom of the ulcer. I have seen like consequences in phthisical cases, when the patients, disregarding the advice of their physician, exceeded in the quantity of the food, or eat such food as was hard of digestion: a few hours they began to feel an oppression, hectic heat increased, the spitting diminished, and was sometimes entirely suppressed; afterwards these last symptoms gradually decreased, the spitting returned but in greater quantity than before. From whence we understand why *Hippocrates*, in the place just cited, says, that heat brings on a greater defluxion.

Hence also we see the reason why we are told in our text, that such food should be given as is fit for nourishment, and least likely to engender more pus. By this is not meant that the forming of pus should be hindered, as it is well known that under good pus the bottom of the ulcer is cleansed and disposed to consolidate; and that in a healthy man, who uses a good diet and regimen, pus will be formed in a wound. All that is meant here is, that we should take care that the food do not, by an excess in quantity, or some unsuitable quality, produce new obstructions and increase the suppuration.

At the same time it is evident how imprudent it is in order to cure the emaciation of phthisical patients to give them glutinous food, with the hope that such aliment will stay longer in the body, and adhere more firmly to the parts. *Bennet*<sup>d</sup> has well remarked concerning the hurtfulness of such food: *Et licet quadam pectorum extremitates eorumque gelatinæ a medicis quibusdam præcipiantur, cum tamen vasa protudentia pectoris vicina infarciuntur, aut exiliora, habitum corporis alienantia, oppilata sanguinem in arteriam venamque pulmonalem relegaverint (quod multoties vitæ desidi accidit certum est) talia viscosa ac glutinosa in re cibaria toto furore morbi decursu abdicanda:* “and although (says he) t

“ fe

<sup>d</sup> Tabid. Theat. pag. 149.



feet of animals, and jellies made therefrom, are advised by some physicians, yet as the blood-vessels in the neighbourhood of the breast are obstructed, and the small vessels which moisten the habit being stuffed up, throw the blood on the pulmonary artery and vein, (as frequently happens to persons of a sedentary life) such viscid and glutinous food is to be forbidden in the whole course of this disease."

## S E C T. MCCIX.

**T**HE first indication is to be answered by the use of such remedies, as are in a gentle and moderate degree acid and saline, of vulnerary herbs and mild balsamics, in every form, and large quantities.

To answer the first indication, viz. the guarding the blood from being infected by the pus, three things are principally to be considered. First, that the pus should not remain long in the vomica, so that less occasion may be given for a re-absorption thereof; and this end is to be effected, by promoting expectoration and using mild detergents for the ulcer. Secondly, that whatever pus is absorbed should be purged off and expelled from the blood as soon as possible, lest being retained it do farther damage: and this expulsion may be obtained by the usual excretory channels of the body; that is to say, the intestines, the kidneys, and the pores of the skin; by which three ways those things are discharged naturally, which could not remain longer in the body without injury to health. Thirdly, such remedies are proper, as efficaciously oppose that corruption of the humours, which is the consequence of the pus being re-absorbed into the blood.

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In endeavouring to answer the first indication expectorating and detergent remedies, the physician must remember to do nothing which may impede healing of the ulcer in the lungs. Now it is known that if an external ulcer were perpetually to be deterged by the surgeon it could never be cured; good pus ought to be left in the ulcer some time that under it there may be made a separation of the diseased part from the sound, and that what is lost and wasted may grow again. Nay, good pus will not be formed, unless the humours effused from the mouths of the vessels remain a considerable time in the ulcer. The same things obtain in an ulcer of the lungs, wherefore we are constantly to promote expectoration, because too frequent a cough exasperates the ulcerated place and hinders the forming of laudable pus. For this reason it is adviseable for a physician, in the cure of this disease, to allay the troublesome cough, and to use anodynes, that at least at night the lungs may have some rest; and thus it is observed, that in the morning good and white concocted pus is spit up with ease and to the relief of the patient; and during the time that the cough does not agitate the lungs, there are hopes, that under the good pus the consolidation of the ulcer may begin; so that if the cure proceeds well, the quantity of pus gradually decreases every day, without the anxiety which commonly attends pus being retained in the lungs. *Bennet* \* gives good advice to this purpose, when he enumerates the rules which should be followed in promoting expectoration: *Horis diacriticis diurnis, lenientibus solum adjuvanda est & promovenda expectoratio, quia tunc temporis naturam adminiculantur invenimus*; “in the day time, when the spitting “ comes on, expectoration is to be promoted “ lenient medicines only, because then we have nature “ ture co-operating with us.” But he recommends that the perspiration should be kept up over the whole body

\* Tabid. Theatr. pag. 121.



body; for by that means the course of the humours unobstructed every where, and nothing is repelled to the internal parts which might oppress the lungs. Wherefore he adds, *ut expectorationi rectius consulatur, partes extremæ pedes optime muniantur, quorum sudores matutinos, per horam promovere tutissimum*; "that expectoration is best promoted by keeping the extremities well defended against cold, and particularly, in which it is very useful to bring on a sweating for an hour every day."

At the same time those remedies are useful, which may gently deterge the ulcerated place; of which kind many are enumerated in the *Materia Medica* under this head, from which such may be selected as seem best to agree with the present condition of the patient. If the pus be rather viscid and tough, and the spitting difficult, the mixture compounded of oxymel, vitriolated tartar, and the syrups of five opening roots may be of use, and others like it may be easily composed according to the same intentions. If there be a dryness in the fauces, and a hoarseness, infusions may be prepared of softer remedies, such as maiden-hair, parietary, scabious, coltsfoot, nettles, &c. which may be sweetened with honey and drank warm often in the day. If a tough viscid mucus at the same time oppresses the lungs, which sometimes happens, smallage, ground-oak, hyssop, and other herbs like those which attenuate; nor is the warm aromatic power of these plants to be feared, as they are first steeped in a large quantity of water; nor will it be amiss to add a third part of milk to such infusions. By these means a proper vehicle is afforded to the urine and sweat, that the pus which has been absorbed into the blood may be expelled by these channels. These infusions should be drank in pretty large quantities by day, not by night, to disturb that rest so necessary for these patients. But as the efficacy of balsamics is justly praised in curing external ulcers, physicians have recommended them in ulcers of

of the lungs. Also it is true, that they cannot be topically applied; but nevertheless being taken into the stomach, they soon diffuse their fragrance over the whole body; and as all the fluids thereof must pass through the lungs, the powers of these remedies reach the part affected: thus we see, that soon after taking turpentine the urine emits an agreeable smell of violets; and the same thing is observed, even if the body be anointed with turpentine. Good physicians prefer native balsams, such as turpentine, balsam of Mecca, balsam copaiva, and balsam of Peru to artificial ones, so much commended by chymists: those for instance which are called balsams of sulphur, which are prepared from sulphur dissolved in expressed or distilled oils, and vended as a certain remedy for a phthisis pulmonalis. Boerhaave<sup>f</sup> speaking from experience says, *pingui acri, indigestili calido, nec cere debili pulmoni, ventriculo, visceribus languidorum appetitum opprimere, sitim augere, torrere nimis jam pridem exsiccata per phthisim corpuscula. Suadeo hinc parum, prudentemque, cum anxietate effectus observatione usum certe non urente carent acredine*; “that they are hurtful to weak lungs, stomach and viscera of the patients, by a warm, acrid, indigestible oil; that they damp the appetite, increase the thirst, and burn up the emaciated body, already too much deprived of its moisture by the disease. Hence I advise, that they should be used very sparingly and with a watchful eye over their effects; certainly they are not void of a caustic acrimony.”

The native balsams themselves have a warm aromatic quality, so that they should be given in a small dose at a time, and frequently repeated, as we see in the formulæ of our author's *Materia Medica* under this head. Bennet<sup>g</sup> abstained from the use of those acrid fiery balsams in the cure of this disease, and advises as follows; *inter expectorantia, detergentia maxime proficua invenimus, quæ ex abiete, pino & terebinto conficiuntur*

<sup>f</sup> Chem. Tom. II. pag. 430.<sup>g</sup> Tabid. Theat. pag. 121.



*tur. Medicamenta acria & stimulantia torpidis, eaque causa congestionem nimis tolerantibus, solummodo condenda, quæ per intervalla quædam tantum usurpanda: ceptis enim quibusdam intervallis, in quibus acria ista stimulantia conducunt, medicamentis prius dictis toto orbi decursu insistendum:* “among detergent expectorating remedies, we have found those most serviceable which are prepared from the fir, pine, and turpentine-tree. Acrid and stimulating medicines should be allowed only in torpid habits, in whom the humours are liable to stagnate and form obstructions, and should be used only at intervals; for except some such intervals, in which these acrid stimulating medicines may be of service, we should persist in the use of those first mentioned through the whole course of the disease.” This certainly a very prudent and important caution in the treatment of this disease.

The second purpose to be answered, for the indication of guarding the blood against the purulent taint is, that whatever pus had been re-absorbed into the blood should be expelled from thence as soon as possible; as also whatever fluids were so altered by this taint, as to degenerate from the qualities of health: or in order to the healing the ulcer, it is necessary that bland healthy humours should flow through the vessels. Hence, at the same time, it appears of course, that every other kind of acrimony of the humours, whether it existed before the disease, or was produced during the disease, should be corrected or urged off from the body. Before, §. 1198. it was simply shewn, that this disease frequently took its rise from an acrimony of the humours; and it is easy to comprehend, that so difficult a disease can never be removed, unless the cause which first produced it can be corrected.

Besides those remedies, which, by sheathing, are capable of weakening any acrimony, or of destroying it by an opposite quality, physicians have always

178 Of a PHTHISIS PULMONALIS. Sect. 1206  
 been used to endeavour to expel it from the body by those channels by which nature discharges acrid particles from the body, and for this end to increase the natural secretions and excretions. The principles of these channels, as has been said before, are three: the pores, the kidneys, and the intestines. But the urine, even in healthy men, contains the salts and the more oily acrid parts of the blood, all physicians unanimously agree, that its secretion and excretion may safely be augmented for abating the acrimony of the blood, and of the other humours. Certainly, and those infusions of vulnerary herbs which have been mentioned, increase the quantity of urine, as they supply the blood with a plenty of water, which has the first rank among diuretics<sup>h</sup>. Native balsams have also an efficacy this way, which the violet smells so immediately communicated from them to the urine, sufficiently shews, that a diuretic quality is justly ascribed to them. But physicians seem to be more cautious and apprehensive, with regard to evacuations by sweat and stool; for it is observed, that when death is coming on in a consumption, the unhappy patients are dissolved into sweats, and exhausted by them: whence large nocturnal sweats (§. 1206.) are enumerated among the bad symptoms and it was noted under the same head, that a diarrhoea with yellow stools, and which had a putrid cadaverous stench, generally put an end to the disease and life together. On this account, many have feared, lest by exciting sweats, or by purging, they should hasten death; and certainly no wise man will attempt either of these things, when the fluids, dissolved by a putrid taint, issue at the pores with the first sleep; or when the blood being dissolved to a corrupt thin fluid, is expelled by the mesaraic vessels into the cavity of the intestines, and produces a most foetid diarrhoea; for then the disease is beyond the power of art: but in the beginning of the disease

<sup>h</sup> H. Boerh. Institut. Med. §. 1122.



before the strength is quite gone, and the body totally exhausted, these methods have been tried by physicians not unsuccessfully, but always cautiously, and being strictly attentive, whether the patient was relieved by them or not.

It was before mentioned, that *Bennet*<sup>i</sup> was very solicitous, that the perspiration should be kept up at the time that he endeavoured to promote expectoration; and advised, that the feet particularly should be kept in a sweat. He recommended thick cloaths, *ex auræ frigidioris appulsu sanguis intro coerceatur unde extravasationis recurrentis impendit periculum*; “lest by the accession of cold air, the blood should be driven inward, which might endanger a return of the hæmorrhage.” And he advises, that instead of linnen, the patient should wear flannel shirts, which more readily imbibe what exhales from the skin, and do not give a sensation of cold, as linnen does, when moist with sweat; for, from this sensation of cold, the pores suddenly contract, and the perspiration is entirely stopped, not always without bad consequences.

Nor is this all; the same author<sup>k</sup> tells us he had found by experience, that sudorifics are often of great service in the first stage of a consumption; he had observed, that spontaneous sweats sometimes break out, and that only on the breast in the sleep. In this case he advises to endeavour to promote a sweat all over the body, and asserts, that this is particularly serviceable to such phthical patients, as are naturally of a cold constitution: he particularly looks on such sweats as are brought on in the morning, and without trouble to the patient, as very useful; at the same time he well admonishes, that sudorifics are hurtful in consumptions of long standing; *eo enim morbi statu, mali hyperxin ne quidem ex parte averruncando proficua sed insultum hecticæ accelerando nociva*; “for in that stage of the disease they

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“can

<sup>i</sup> Tabid. Theatr. pag. 128.

<sup>k</sup> Ibidem, pag. 121.

“ cannot do service by removing in part the materia morbi, and are hurtful, by accelerating the attack of the hectic fever.” He adds, that frequent sweatings are of service to persons, *quibus uredo impetigo, aut pruritus autumnalis & hyemalis cutes obfesserit*, “ as are subject to heat, scurfs, or itchings, on the skin in autumn or winter.” At the same time he was very careful to observe, whether any good followed from the sweat being excited; *si inter sudandum tussis sedatur & appetitus excitatur, audacius & sæpius proliciendi*; “ if, during these sweats the cough is appeased, and the appetite increases, he says, we may more boldly and frequently excite them:” and he commends these sweats for this reason, because acrid particles are evacuated by this means from the blood; for he advises that they should be repeated, *si labra præter labendo, aut linguae membranam vellicaverint. Quum vero jam sanguis, salem ejusmodi secernere desierit, mitius agendum est tandemque desistendum*; “ if they vellicate the lips or membrane of the lungs, as they transude. But when this kind of salt ceases to be secreted from the blood, we must leave them off by degrees.” He even conceived great hopes from exciting copious sweats, that if neither pus, nor blood, nor saliva with a foetid smell like rotten eggs were excreted any longer, he promises a cure, although the cough should still continue violent; which, says he, used to give way gradually by persisting in the same method.

We easily understand, that acrid sudorifics, such as may much increase the heat and motion of the fluids, or deprave them by their acrimony, are not the sort which are to be used; but such should be chosen as have a mild aromatic substance, and they should be infused in a considerable quantity of water. There is a list of these in our author's Institutes<sup>1</sup>, from which those may be selected which conduce best to the present purpose. Under this head in the *Materia*

<sup>1</sup> Boerh. Instit. Med. §. 1189.



ect. 1209. Of a PHTHISIS PULMONALIS. 181

*ia Medica*, we find the decoction of the three sandal woods, of saffraſas, &c. which may very well ſerve the end here propoſed; and at the ſame time is an example, from which, forms of a like nature may be compoſed. If the patient take two ounces of ſome ſuch decoction warm every two hours in the day-time, and in the evening when he is going to ſleep, take four ounces, and early in the morning the ſame quantity; a gentle equable ſweat uſes to follow, by which the acrid particles are excreted from the blood, and at the ſame time a mild diluting vehicle is afforded to the body.

It was remarked before, §. 1198. N<sup>o</sup> 1. that *Bennet* had ſeen ſome patients almoſt waſted away, whoſe whole ſyſtem of blood was impregnated with ſalt; and in a man who had eat too great quantities of common ſalt, *sudor ſponte prorumpens ſaliſſimus erat, ſibi permiſſus juxta naſum alibat in cryſtallos, oculis facile detegendis, digitis friabiles*; “ the ſweat which broke forth ſpontaneouſly, was extremely ſalt; and that which dropt about the noſe, if not wiped off, formed into cryſtals, viſible to the eye, and friable by the fingers<sup>m</sup>. ”

From hence it appears, that ſome ſervice may be expected from exciting ſweats, with proper caution, in a beginning conſumption. *Marcellus Donatus*<sup>n</sup> relates ſome caſes, in which a decoction of guaiacum cured a phthiſis, not merely beginning, but which had been of ſome ſtanding. Among the reſt is a remarkable caſe of a woman who was cured by *Philip Ingraſſias*, *Post largam hæmoptoen in phthiſin lapſa erat, pluribusque inſequentibus menſibus non contabuit modo, ſed continuo pus male olens exſpuebat, præſertimque per intervalla quædam, non majora quidem duabus hebdomadis, maximam puris quantitatem inde collectam, ſæpe numero quatuor librarum, pauloque minus ac nonnumquam plus exſpuebat; hæc cum vix per menſem ligni*

N 3

*ſancti*

<sup>m</sup> Tronchin de colica pictonum, pag. 101.  
hiſtor. mirab. Lib. III. Cap. x pag. 184.

<sup>n</sup> De med.

*sancti decoctum absorbuisset, ita sanata fuit ut decimus annus ageretur, dum hoc scribebat Ingrassias, salva supervixerit nec amplius recidiverit:* “after a copious hæmoptysis she had fallen into a consumption, and for several months afterwards not only grew thin but spit forth foetid pus; and that at intervals of no more than a fortnight, she spit out the pus collected from thence not much less than four pints and sometimes more: when this woman had taken decoction of *lignum sanctum* for a month, she was so well recovered, that ten years after, when *Ingrassias* wrote this account, she was alive, and never had a relapse.” Now it is well known, and we shall particularly observe hereafter, when we treat of the lues venerea, that guaiacum wood very efficaciously promotes sweating, and that obstinate ulcers are cured by it; as also that it is very efficacious in curing the diseases of the bones, as was said before.

Physicians also have sometimes attempted to evacuate the morbid matter by stools, but rarely, and it seems with caution, they have chiefly tried this method; for such patients, *qui carnes obtinuerunt induratiores porosque occlusiores*, “whose muscles were hard, and their pores contracted;” but in the beginning of the disease, as *Bennet* ° says; for when it is grown to a height, he advises abstaining from purges, and using only gentle openers, which he calls minocratives, with which he advises, that cordials and antiseptics should be combined: at the same time he says, *crebro vero neutiquam reiteranda sunt nisi mucosa, viscositas aut aqua salsuginea, copiosè sese excrementis immiscens aliud suaserit*; “that they are not to be repeated, even these frequently, unless a mucous viscosity, or a saltish water, being mixed in large quantities with the excrements, should induce us to alter our practice:” for this seems to have been his principal aim, that he might draw off the viscid pituitous saburra, or acrid matter, by stools, lest the

ulce-



acerated lungs might be further injured by them. or elsewhere he has said <sup>p</sup>, *si saburram pituitosum aut luviem salsuginosam, inter purgandum copiosè excrevet phthificus, levamen maximam pectore adfert, & non inguam salutis fiduciam creat*; “if a consumptive person discharges plentifully by stools, a pituitous slime, or a brackish fordes, this relieves the breast greatly, and gives no small hopes of recovery.” Nay, this excellent writer seems more to commend purges in the beginning of the disease, when there is in the bowels this pituitous slimy saburra, than when some acrimony prevails; for he rather endeavours to expel that by sweats: this appears from the following words <sup>q</sup>, *dum salsuginosa in caput defluxerint non purgandum ne pectori corriverentur; non enim tempore sudores elicere maximè proficium invenimus*; “when there is a defluxion of saltish humours upon the head, we should not purge, lest they be transferred to the breast; but in this case we find it is most serviceable to promote sweats.”

On the same account he seems to prescribe gentle cathartics, to persons inclined to catarrhs, both in spring and winter, but as preventives before the catarrhs come on; for he adds <sup>r</sup>, *dum ἀνακαθάσει studendum prætermittenda minorativa*; “when we are endeavouring to promote an anacatharsis, we must omit minocratives.”

Hippocrates <sup>s</sup> likewise appears sometimes to have purged in consumptions, but with caution also.

Bennet <sup>t</sup> experienced, that gentle purges were then most useful in the beginning of a consumption; *si ægri horis anteleucanis & quasi inter somnum fæces alvinas deposuerint*: “when the patients just before break of day, and being half asleep, and half awake, had a stool.” In his cure he gave physic about bed-time, so as to procure two or three stools

N 4

in

<sup>p</sup> Ibidem, pag. 112. <sup>q</sup> Tabid. Theatr. pag. 119. <sup>r</sup> Ibidem, p. 120. <sup>s</sup> De morb. Lib. II. Cap. xvii, xviii. Charter. Tom. VII. pag. 569, 570. <sup>t</sup> Tabid. Theatr. pag. 118.

in the morning, from whence none, or a very small loss of strength followed; for at the same time, when the effect of the physic was over, the discharge of the pus by spitting was not stopped in the day time.

The third thing to be effected in order to guard the blood against the putrid taint, was, that such remedies should be used as most efficaciously resist the vitiation of the humours consequent on the re-absorption of the pus into the blood.

It was shewn before, §. 406. that the very best pus is liable to grow putrid by long stay; wherefore also, in an ulcer of the lungs, the pus retained there too long, or re-absorbed into the blood, tends to putrefaction; and the appearances which are observed in a consumption, confirm this. It was said also that sometimes the matter spit out had a very offensive smell. *Hippocrates*<sup>u</sup> remarked, that the patients when about to spit, found the taste of the saliva in their mouth abominable; and that if it fell on burning coals, it had a grievous foetid smell; that the pus sometimes grows putrid about the heart; that sometimes pus is spit up which is like hailstones, and being rubbed in the fingers, feels hard, and smells foetid; and that there is a foetid smell in the mouth like raw fish. Elsewhere he says, the pituita grows putrid in the head, and flows down to the lungs; and that this viscus is irritated by salt phlegm, and there comes on a vehement thirst. If, besides this, we reflect, that the colliquative sweats in the last stage of a consumption, have a most exceeding bad smell, and that a most putrid diarrhoea comes on towards the end, which is presently followed by death, it is evident, that there is an universal tendency to putridity in this disease; and that therefore such remedies are requisite in this distemper, as most efficaciously resist putrefaction, and thus may prevent it while it is feared, or correct it actually existing. In the mean time, we are to attend to the ulcer, and take

<sup>u</sup> De intern. affect. Cap. 11. Ibidem, pag. 645.



take care that we do not use such acrid antiseptics as may exasperate it. Those native balsams which have been already mentioned, besides an aromatic fragrance, have also an acid, which is contrary to putridity; as the chemical analysis of them demonstrates. Physicians frequently give myrrh to consumptive persons, as appears from the formulæ in the *Materia Medica* under this head. Now from the admirable experiments of Dr. *Pringle*<sup>w</sup>, it appears, that myrrh is a powerful antiseptic, far exceeding sea salt in this quality. We are indebted to this gentleman for many excellent observations, tending to elucidate the effects of the remedies generally advised by physicians: as chemists had taught us that putrefaction produces a volatile alkali, there was a fear that the disposition to putridity should be increased by such things as contained this alkali; nevertheless, physicians had observed, that lobsters boiled and soaked in their own broth, were very good nourishment for consumptive persons. Now it is known, that lobsters have a kind of urinous smell, not unlike a volatile alkali: hence, many feared danger from them, and sauced this food with vinegar or lemon juice, to obviate putridity. But this author<sup>x</sup> has demonstrated, that alkaline salts prevent putrefaction, even more efficaciously than sea salt; and he found the same thing hold true of fixed alcalis: the salted waters which contain a fixed alkaline salt, are safely and usefully given to consumptive persons, especially if they be mixed with a third part, or even half of milk. *Avicenna*<sup>y</sup> advises the plentiful use of sugar of roses, and orders the patient to eat of it, *omni die quantum potest, quamvis multum sit, ita etiam ut cum pane*, “as much of it as he can, (though that should be a great deal) every day, even with his bread.” He also relates a case of a consumptive woman

<sup>w</sup> Observations on the Diseases of the Army, pag. 377.  
<sup>x</sup> Ibidem, pag. 372.      <sup>y</sup> Canon. med. Lib. III. Fen. 10. Tract. 5. Cap. vi. pag. 668.

woman at death's door; then says he, *tunc surrexit quidem frater ejus adeam, curavitque eam hac curâ tempore longo & revixit & sanata est & impinguata est. & non est mihi possibile dicere summam ejus quod comedit de zuccaro rosaceo*; "her brother came to her, and  
 "cured her with this remedy, after a long time,  
 "and she escaped, and was cured, and grew fat;  
 "and it is not possible for me to tell how much sugar of roses she eat." *Avicenna* also commends trochises of camphire. How well does all this agree with Dr. *Pringle's* observations <sup>z</sup>? He has found out that there is a powerful antiseptic quality in sugar, and thinks that it is owing to the present great use of it, that fewer putrid diseases occur now than formerly; and as to camphire, he has observed, that two grains of it only were of more avail to prevent putrefaction, than sixty grains of sea salt <sup>a</sup>. He likewise found a powerful antiseptic quality in the *Peruvian bark* <sup>b</sup>. We know that *Morton* advised the use of the bark in this disease. *Torti* <sup>c</sup> owns, that he gave the bark to several phthical persons not yet quite worn out with the disease, both to comply with their request, and to stop the too frequent returns of the fever. He always found indeed, that it procured a sensible relief for some days, and sometimes, though not always, with a manifest interruption of the accustomed exacerbations; but the disease got head again soon, and pursued its usual course to death: yet he believes, that it was this remedy by which he preserved a lady of quality, who was pregnant, so long as that she was safely delivered of a child. He says however, elsewhere <sup>d</sup>, that he had seen a boy whom he thought consumptive, and who was esteemed so by every one, and who besides was afflicted with a *spina ventosa*, when, at the urgent request of the boy's father, he reluctantly gave him the bark, expecting

<sup>z</sup> Observations on the Diseases of the Army, pag. 393, 394.

<sup>a</sup> Ibidem, pag. 373.

<sup>b</sup> Ibidem, pag. 379.

<sup>c</sup> Lib. V. Cap.

11. pag. 449, 450.

<sup>d</sup> Lib. V. Cap. v. pag. 492.



pecting no good from it, and afterwards he saw him walking about the city, so fleshy, strong, and ruddy, that he scarce knew him again, and quite free both from the consumption, and from all remains of the *pina ventosa*. He afterwards relates other instances of consumptive persons restored to health by the bark; he does not indeed deny that in some cases it was unsuccessful, but however did no harm. It is to be remarked, that this worthy physician gave it reluctantly, not expecting it would do any good, and therefore was the more amazed at its success.

I have myself tried the use of the bark in the beginning of a consumption, and have not repented of the trial. I gave the bark under various forms, and for a long time, to a lady of very high birth, who, by a vexatious cough, and a slow fever, was emaciated, without an hæmoptysis having preceded; and although her strength was pretty much sunk, and she spit pus, and had a vitious conformation of the chest, yet she perfectly recovered.

Thus we see, that many physicians used such things both in diet and remedies as had an antiseptic virtue, although perhaps they were not aware of these. *Cardanus*<sup>f</sup> relates, that he cured a young girl whose father died of the same disease, labouring under a consumption of the worst kind, and that so vehemently, that he gave her over; for she had a violent fever, a difficulty of breathing, a great cough, and a plentiful spitting of pus. He ordered, *ut sola ptisanâ pro cibo uteretur, aquaque cum saccharo confecta: acciperet autem singulo mane, uncias quatuor decocti caudarum & chelarum canerorum in aqua hordei cum drachmis duabus sacchari: convalescitque perfectè, & sanata est*; “ that she should live entirely on ptisan and water sweetened with sugar, and should every morning take four ounces of decoction of tails and claws of crabs in barley-water, with two drachms of sugar, and she perfectly recovered.”

He

<sup>f</sup> De Curat. admirand. Curat. 8. Oper. Tom. VII. pag. 254.

He saw many others were cured by the like means and particularly by the constant use of sugar of roses<sup>g</sup>.

A youth from drunkenness and excess in venery had got a perpetual violent cough; he spit a great quantity of matter of various colours; he had straitness and oppression on the breast, and a fever and was emaciated almost to a skeleton; his strength also was greatly decayed, and every one despaired of his recovery; he longed very much for garden strawberries, the physicians gave leave that he should have them, and when, in three weeks time, he had eat five ducats worth of this fruit, he was so much altered in all respects for the better, as that there were very good hopes of his recovery, and in two months time he grew well<sup>h</sup>: he probably eat also a good quantity of sugar, as this is generally strewed over these fruits.

Small-beer without hops, milk-whey made acid with juice of lujula, of china oranges, pine-apples &c. were commonly recommended by *Bennet*<sup>i</sup>, for constant drinking for consumptive persons. Patients in this disease, who spit purulent foetid matter have been cured by drinking a mineral water, which besides steel, contained also allum<sup>k</sup>. Now Dr. *Pringle*<sup>l</sup> has demonstrated, that allum possesses a more powerful antiseptic virtue than other salts; perhaps to this head might also be referred what *Tulpius*<sup>m</sup> relates of a woman, who by neglecting bleeding having formed pus, spit such filthy matter, and so much of it, as to fill a large basin, and infect an ample room with the stench; and this unhappy woman was as emaciated and decayed as in the last stage of a consumption: having laboured under this disease above

<sup>g</sup> Ibidem, Curat. 10. pag. 255.

<sup>h</sup> Hoffm. Med. rat. & system. Tom. IV. Part. IV. pag. 330.

<sup>i</sup> Tabid. Theatr. pag. 150—152.

<sup>k</sup> Essays and Observations, physical and literary, Vol. I. pag. 364.

<sup>l</sup> Observations on the diseases of the army, pag. 376.

<sup>m</sup> Lib. II. Cap. viii.



Over four months, she began to long for raw oysters, which she eat greedily, with so good an effect, that all the symptoms presently abated, and she soon perfectly recovered. Now oysters have a very pleasant saltish liquor. *Hippocrates* <sup>n</sup> advised salt meats for promoting a spitting in purulent cases. It cannot however be denied, that Dr. *Pringle's* <sup>o</sup> experiments prove, that a small quantity of sea salt rather accelerates than impedes putrefaction; and hence perhaps, it is a necessary sauce to our food, to make it more readily dissolve in the body. But a brine made of sea salt preserves the flesh of animals from putrifying, as is well known. Certainly it would scarcely appear safe, to throw in sea salt in such quantities into the body as would be sufficient for making it act as an antiseptic; especially as in the cure of an hæmoptysis every thing acrid and salt is to be avoided, lest the hæmoptysis should return. It is however, true, that a spitting of blood is less to be apprehended when an ulcer is already formed in the lungs; for by our former observations it appears, that the lungs may be entirely consumed by a purulent phthisis, although the hæmoptysis do not return; hence also we comprehend, how a putrid curvy may be caused by eating salted food, as it often happens in long sea voyages; which was not clearly apprehended before Dr. *Pringle* made his experiments. We have certainly milder remedies, which possess a very efficacious antiseptic virtue, and therefore may very well do without sea salt.

It also is manifest, that in a phthisis pulmonalis, it is of the greatest importance that the blood should be preserved free from a putrid taint, and yet that physicians have not always been sufficiently attentive to this.

## S E C T.

<sup>n</sup> De Locis in homine, Cap. viii. Charter. Tom. VII. p. 367.  
<sup>o</sup> Observations on the diseases of the army, p. 391, 392.

## S E C T. MCCX.

**T**HE second indication is answered, by expelling the morbid matter by liquid, diuretic, medicines ; by such remedies and methods internal and external, as excite a cough ; by motion, riding, going into the country ; also purifying by the aid of balsamics, used internally and externally ; and consolidating by healing pectorics.

No ulcer can be healed, as was said before, till it be reduced to the state of a simple wound, that it may be closed up. Wherefore the pus must be discharged, and the cavity in which it was lodged be cleansed ; which is to be done by a gentle and moderate suppuration, as we see in external ulcers : then the place thus cleansed must be closed up. We readily see, that every thing which has been recommended in the preceding paragraph is of use also to answer this indication ; for infusions of vulnerary herbs, plentifully drank, absterge the ulcerated place, and at the same time, wash away from the blood such pus as may have been absorbed into it ; and particularly carry it off by urine, as the infusions are in water, and most vulneraries have a diuretic quality. Certainly *Galen* saw an abscess of the lungs purged off by urine, as was mentioned on another occasion, §. 406. And a remarkable case is related<sup>p</sup> of a patient afflicted with an ulcer of the lungs, whose spitting was suppressed by injudicious treatment, and who had such very bad symptoms as that death seemed at hand : by the advice of a skillful physician, he drank boiled asses milk for eight days ; the effect of which was, that although the spitting was still suppressed, the disease did not grow worse.

<sup>p</sup> Gio. Michele Gallo dell' uso del latte, Tom. II. pag. 93.



vorfe. On the ninth day came on a great pain in the loins, and a troublesome stranguary; and afterwards he discharged purulent foetid urine for a week, the breast was relieved, the fever ceased, and he grew perfectly well. Yet the pus collected in the ulcer of the lungs could not have been evacuated by urine, unless it had first been re-absorbed into the blood in great quantities; which certainly is never without danger, although it is sometimes happily expelled from the body by urine or stools.

The evacuation of pus by spitting is far more safe; but this can scarce be effected without a cough; hence, such remedies as excite a cough, are advised to this end; for a cough clears the lungs, but at the same time if it be violent, it exasperates the ulcer: where such remedies are to be recommended, which render the matter which is to be evacuated by spitting easy to be moved, and yet do no injury by an acrid stimulus: a decoction of this kind appears in the *Materia Medica*, under this head. But when the pus is ripe, and of a laudable kind, it is easily brought up by coughing, and without any trouble almost; which chiefly happens in the morning, after good sleep, for then the lungs have been quiet a long time, and agitated only by the gentle motion of breathing, and thus the healing of the ulcer is begun under good pus. At the same time we easily see, that the same expectorating remedies are not alike good in all cases. Bennet<sup>a</sup> cautions well, *medicamenta acria & stimulantia torpidis eaque de causa congestionem nimis tolerantibus, solummodo concedenda, quæ per intervalla quædam tantum usurpanda exceptis enim quibusdam intervallis in quibus acria & stimulantia conveniunt, medicamentis prius dictis toto morbi decursu insistendum*; “acrid and stimulating remedies are only to be allowed in persons whose torpid constitutions suffer matter to be accumulated, and collect too long without evacuating it; and there  
“ they

<sup>a</sup> Tabid. Theatr. pag. 121.

“ they should only be used, at certain intervals and  
 “ periods; for such intervals excepted, in which it  
 “ may be proper to use acrid stimulating medicines,  
 “ we should persist in the use of the remedies men-  
 “ tioned before, through the whole course of the  
 “ disease.” So that if the saliva is naturally tough,  
 or if a viscid mucus is excreted, together with puru-  
 lent spitting, and with difficulty, then an infusion  
 of hyssop, with simple oxymel, or with oxymel of  
 squills, is of use; or if these be thought improper,  
 milder infusions of vulnerary herbs may suffice; all  
 these infusions being drank, are mixed with the  
 blood, and are carried to the ulcerated place: hence  
 physicians have thought of external remedies for this  
 purpose also. Certainly much service is not to be  
 expected from plaisters, or ointments, applied exter-  
 nally to the breast; although physicians sometimes  
 allow also of these, when the patients have a great  
 confidence in applications of this kind; but no re-  
 medies can come in contact with the ulcer, unless in  
 the form of a steam, as even a single drop of water  
 falling into the lungs is immediately rejected by a  
 cough. We read in *Hippocrates*<sup>r</sup> as follows; *quum*  
*autem sputum graveolens fuerit, intermediis inter lenti-*  
*cule decoctum diebus, medicamentum in pulmones infun-*  
*dere, intermisso vero uno die, suffumigia adhibere* (Συμῖαν);  
 “ but when the matter spit out is foetid, on the in-  
 “ termediate days, between the use of the decoction  
 “ of lentils, infuse a medicine into the lungs, and  
 “ after a day more past, use fumigations.” Cer-  
 tainly steams and vapours drawn in by respiration,  
 together with the air, may every where come in con-  
 tact with the whole aerial cavity of the lungs; and  
 thus various remedies may be applied, according to  
 the various condition of the ulcer. *Bennet*<sup>s</sup> tells us,  
*inter præsidia evaporationes & suffitus tanquam nobili-*  
*ora & quibus unicè in extremis angustiis confidamus pen-*  
*sitanda,*

<sup>r</sup> De Morb. Lib. II. Cap. xviii. Charter. Tom. VII. pag. 570.<sup>s</sup> Tabid. Theatr. pag. 76.



*anda, &c. pulmones enim aridiores horum madore in-*  
*nerantur, kumentes nimisque laxati illorum siccitate in-*  
*erantur, putredine & viscositate obliniti levantur, am-*  
*orum denique consortio ulcera sordescencia detergantur,*  
*ec non novæ affluxuræ materia, & in partes asurgentis,*  
*is molesque reprimuntur, simili semper in assumtis ser-*  
*ato scopo;* “ vapours and fumigations are to be  
 reckoned very noble remedies, and which are  
 our sole confidence in extreme danger, &c. for  
 the lungs growing too dry and tense, are softened  
 by the moisture of one kind of applications, or  
 dried and hardened, when too moist and relaxed,  
 by the dry fumigations, and when obstructed with  
 putrid or viscid matter, are cleared from it; and  
 by the combination of both kinds, foul ulcers  
 are deterged, and also the force and quantity of  
 new matter flowing to the part are abated: the  
 nature of the vapours applied, being always  
 adapted to the end intended to be answered.” He  
 then relates many cases which prove the happy ef-  
 fects of this method: and afterwards<sup>t</sup>, he describes  
 the instruments by which this watery steam may  
 commodiously be so applied, that they may arrive  
 safely to the air-vessels of the lungs; at the same time  
 he has various formulæ of remedies<sup>u</sup> to answer the  
 different indications of softening, absterging, drying,  
 and consolidating. Perhaps it may seem surprising,  
 that he should use orpiment reduced into trochises,  
 with the white of an egg, for a fumigation, as it  
 has been described by the ancients under the name  
 of arsenic, and therefore is accounted a poison by  
 many. But certainly what we at this day call ar-  
 senic was unknown to the ancients, and orpiment in  
 many of its qualities resembles sulphur, and is im-  
 properly called citrine arsenic, as it is harmless  
 enough<sup>w</sup>; and air replete with sulphureous vapours,  
 VOL. XII. O is

<sup>t</sup> Ibidem, pag. 168.    <sup>u</sup> Ibidem, pag. 165, & seq.    <sup>w</sup> Herm.  
 Boerh. Chem. Tom. I. pag. 47. & Frid. Hoffm. Observ. Phys.  
 Chem. pag. 259, & seq.



is recommended as very useful, by physicians in this disorder, for consumptive persons to breathe it a considerable time, on *Mount Tabias* in particular, near *Naples*<sup>x</sup>. Thus *Galen*<sup>y</sup> also in his time, sent consumptive persons to *Tabias*, near *Vesuvius*, to drink milk there, and constantly breathe an air of this nature. *Bennet*<sup>z</sup> attempted to make such an air artificial; he says, *cujuscunque sint generis suffumigationis & habitus, penitus viceque ipsius aeris in parte, & spiritibus suscipiantur, in conclavi, aut cubiculo clausis, & circumnestsus, ut vitetur omnis aeris frigidioris afflatus, ibique diu perduret ægrôtus; secus enim incassum exercentur* “ of whatever kind the steams and fumigation “ shall be, let them be received intire; and instead “ of air itself, into the organs of respiration, in “ closet or chamber, with the windows shut, that “ breath of colder air may be excluded, and let the “ patient stay there a long time, else these applications “ will be used in vain.”

At the same time he warns us, that the first fumigations received into the lungs are very troublesome; but that afterwards the thing is carried on with great ease. It was said before, §. 1200. that Dr. *Mead* in his *Monita & Præcepta Medica*, recommends fumigations of frankincense, storax, &c. although he knew that this remedy was scarce ever used, and neglected as unprofitable by most. I have imitated his method in a vomica not yet opened; for I contrived that a steam of hot water should be constantly exhaled through a pipe, first of all near the bed, and afterwards, when they bore this well, I had brought nearer, that they might breathe for a long time a moist and warm air, and by this means gained my end of making the vomica burst soon than else it would; and I caused fumigations to be made with frankincense, amber, storax, and benzoin.

<sup>x</sup> Fromond. *Risposta Apologetica*, pag. 438. <sup>y</sup> *Metho*  
*Med. Lib. V. Cap. xii. Charter. Tom. X. pag. 122, 123*  
*Tabid. Theat. pag. 125.* <sup>z</sup> *Monita & Præcept. Med. pag. 5*



such a manner, as that all the air of the room  
 could be impregnated with them, increasing the  
 quantity gradually; for without this caution a vio-  
 lent cough ensues, which may do harm. Patients  
 fear the smoak of frankincense and storax easily  
 enough, but amber is more irritating, as it is re-  
 moved by the fire into a pretty hot oil and a volatile  
 acid salt; but benjamin, although its odour be fra-  
 grant enough, should be sparingly mixed with the  
 other materials for the fumigation, because it has an  
 acrid steam, which, when received on a paper cover,  
 condensed into little messes of a snowy colour,  
 which are sold in the shops under the title of flowers  
 of benjamin; and have so warm a quality, as when  
 put on the tongue to excite a sensation like burning.  
 I have used the steam of benjamin, that the vomica  
 having first of all been mollified by watery steams,  
 might be broke by a sudden and violent cough being  
 excited.

We are however to observe, that it is not every  
 remedy whose virtues will ascend in exhalations, and  
 under that form be applied to the lungs: the efficacy  
 of emollient herbs stays behind in the decoction, and  
 the steam arising from thence is mere water, which  
 however gives a very good emollient and moistening  
 steam. Physicians, however, often prescribe these  
 decoctions, and rightly, because they fear lest the simpli-  
 city of the remedy, if they ordered only the steams  
 of water, should make the patient and his friends  
 despise it, although they very well know that nothing  
 ascends to the lungs from these decoctions but water  
 reduced to vapour. But they are mistaken, who in-  
 stead of making the lacerated vessel in the lungs con-  
 tract itself, order the patient to draw in the steam of  
 a decoction of astringent remedies; for the steam of  
 hot water itself relaxes, and the astringent qua-  
 lities are fixed and do not ascend with the water.

Such exercise also as the strength, impaired by the  
 disease, can support, is of great service. For it is

known that muscular motion accelerates the return of the venous blood to the heart, and that the heart is thereby urged to more frequent contractions in a given time; and that thus also a greater quantity of blood is driven with increased velocity through the lungs; and by this means the purulent matter may sooner be cleared away from this viscus, and expelled by spitting, especially in the morning, when a quantity of digested pus has been accumulating during sleep. At the same time also respiration is rendered brisker, and the air being more frequently drawn in and breathed out from the lungs, performs the office of an excellent deterfive remedy, especially if it be the pure air of a healthy country place. But it is very evident that caution is necessary here, for not only the cleansing of the ulcer, but the healing of it also, is necessary; and if an external ulcer was constantly wiped it could never be healed. *Bennet*<sup>b</sup> prudently warns us of this, ordering great care to be taken regard to motion of the body by day, and light exercise, especially in *calidioris temperaturæ & rarioris texture ægrotantibus*, “for patients of a warm temperament and slender frame.” He advises all to exercise principally the lower parts of the body, and vehemently condemns all violent motions of the upper parts. “But” (says he) *verum in pectoralium luto tenore & frigidâ crassi motus concitatiores pectoris musculos magis dilatantes, aliquoties imperandi utpote ardentio; hastarum armatarum jacellatio, &c.* “with the chest, and the parts appertaining thereto, of a lax habit and cold temperament, brisker motions, and such as may more dilate the muscles of the breast, are sometimes to be ordered, such as shooting with a bow or darting a spear.” But violent motions seem rather proper for corroborating the general habit, and the breast in particular, than for curing an ulcer of the lungs. On another occasion §. 1200. N° 4. it was remarked, that it afforded

<sup>b</sup> Tabid. Theatr. pag. 129.



very favourable prognostic, if, from the use of remedies, or travelling, the too strait chest became plumper, and the strength increased; and that, on the contrary, a strait compressed chest was held a bad prognostic, as we said §. 1198. It is certain, that the strength and fulness of the muscles is increased in those parts of the body which are more moved than the others. They who frequently speak in public, have the muscles of the face almost always larger; and how vast are the muscles of the arms and shoulders of those brawny artificers, who labour in beating out anchors. As most people do almost every thing with their right-hand, and seldom use their left, it most frequently happens that the right-hand is larger and stronger than the left. From whence it appears, that the muscular motion of the arms and hands may be of use for the mending the structure of the chest.

At the same time it is easy to comprehend, that such kind of motions are only to be recommended to such who have almost got the better of this disease, and have acquired sufficient strength for going through such kind of exercises as those mentioned above: and it seems to be more useful and safe to provide such exercise and motion for consumptive persons, as may answer the end and procure the proposed advantage, without subjecting them to be much fatigued. Riding on horseback is of great efficacy in this, as well as in many other chronical diseases. During this exercise the whole trunk is perpetually agitated, the air acts with more momentum upon the lungs; for while a person is riding he almost always feels a wind in his face, although not the least breeze appear to blow, nor a leaf on the trees to move. The excellent Sydenham<sup>c</sup>, with his usual candour, owns that he had cured some relations of his by riding: *num certo scirem me nec medicamentis quantivis pretii, nec aliâ methodo quæcumque demum ea fuerit, nihil magis proficere potuisse quam si multis verbis hortatus fuisssem*

198 Of a PHTHISIS PULMONALIS. Sect. 12  
*fuisse ut recte valerent*: “ when I certainly knew, t  
 “ neither by giving them the most costly drugs,  
 “ by any other method whatsoever, I could have do  
 “ them any more service, than if I had with m  
 “ words exhorted them to be well.” Nor had  
 seen riding to be of use only in a slight degree of t  
 disease, but even in a case which was all but des  
 rate, when after night-sweats a diarrhœa had alrea  
 come on, which usually is the harbinger of dea  
 Nay, he was not afraid to equal the efficacy of ridi  
 in this disorder, with the virtues of the bark in ag  
 and of mercury in the venereal disease: but, at  
 same time, he cautions the patients to be careful  
 lie in dry sheets, and to ride far enough. And  
 adds, *vitæ æquum prætergressis multo diutius in hoc*  
*exercitio persistendum, quam infra hanc ætatem posi*  
 “ they who are past the acme of life should per  
 “ longer in this exercise, than they who have r  
 “ yet attained thereto.” But in order for a per  
 to ride on horseback some strength is necessary, a  
 if that be wanting, a carriage may be substituted  
 the horse; from which manner of riding also, *Syde*  
*ham* attests that he has seen wonderful good effects  
 the cure of a consumption, although he gives the p  
 ference to riding on horseback. I have given t  
 same advice to many, to wit, to ride in carriages, a  
 especially to such whose strait circumstances did n  
 allow of the expence of a horse. I have know  
 some sailors and fishermen, who, having an ulcer in t  
 lungs, became coachmen, &c. and were perfe  
 cured. Weak patients should begin by riding in  
 carriage, and as their strength increases, riding  
 horseback may be advised; but these exercises are  
 most service in the morning, after a light breakfas  
 for when the stomach is full, persons do not be  
 riding so well. It is also prudent to ride softly  
 first, and a little way, increasing the briskness of t  
 motion and the length of the ride gradually. B  
 weather must be avoided at first, which, as t  
 streng



strength increases, and the disease abates; is not so much to be minded. Going into the country is also commended by physicians; not so only that the patients may enjoy a freer and purer air, than that of cities, but also that as their strength increases, free from cares, they with light rustic employments exercise their bodies and amuse their minds, and make their time less tedious. Is there not perhaps another cause, why living in the country may be of service to consumptive persons? It is known that when, after dry weather for some days, rain falls and wets the earth, a pleasant smell arises perceptible to every one, and which is commonly ascribed to the plants; which wanting moisture before, and being now refreshed by the rain, exhale their scents more freely and copiously. But *Reaumur*<sup>d</sup> has observed, that there is a like fragrance to be perceived after rain in fields, where there is nothing but dry stubble left after the harvest: and examining the affair more attentively, he found that dry earth is without smell, but as soon as it is so much moistened as to be of the consistence of soft paste, it exhales a strong odour; more water be added this odour abates, or even quite ceases. Nor does it seem easy to exhaust this power which the earth possesses, of producing a smell: his author every day for a fortnight, and several times each day, made cakes of wet earth, then dried, then moistened it again; nor could he perceive that, after these so often repeated experiments, the earth if moistened again was less fragrant. He observed, moreover, that this fragrance would not spread to any great distance, without being much diminished and soon entirely ceasing. In many parts of the earth vapours ascend to a small height from its surface, which kill animals<sup>e</sup>; and it has been observed that this fragrant exhalation ceases, if thunder and storms soon follow upon the rain: while these yet last the

<sup>d</sup> Academie des Sciences l'An. 1730. Mem. 403, &c. <sup>e</sup> Ibid. An. 1751.

exhalation returns; and after the storm is over for some hours, this fragrance strikes the smell of a person even going upright, and consequently at a considerable distance from the earth. Every one, I believe, must have remarked this at some time or other. Hence the earth as it seems, when it is moistened to a certain degree, exhales fragrant steams of various kinds in various places, as the difference of the smell shews, but most of them are wholesome for men faint with the summer heats feel themselves wonderfully refreshed, when they scent this fragrance after rain. In some places these effluvia are perhaps hurtful, and may be the causes of endemial and epidemic disorders, of which we shall speak hereafter.

Perhaps it may appear strange, that I should see to ascribe any peculiar efficacy for curing the phthisis to this property of the earth, as these effluvia from the ground, floating in the air, claim rather to be reckoned a wholesome air; but there is another reason I have formerly heard, from a person most deserving of credit, that through the whole kingdom of *Granada*, they have a method of curing a phthisis by an earth bath; and I have since read the same account, in the works of *Francisco Solano de Lugo* (famous for his discovery of prognosticating the crisis of diseases from the pulse alone). He attests that he used a bath of earth with success, and among many other cases, that he cured a hectic, which had been judged incurable, by thrice using a bath of earth: this he performed in the following manner: he caused a pit to be dug in the earth, where plants had been sown; in this pit he put the patient up to the neck, and then covered them with the same earth which had been dug out, and there left them till they began to shiver: while they remained in this pit he gave them food, if they wanted any; as soon as they began to shiver, he caused them to be taken out

<sup>†</sup> Origen morboſo capital. V. pag. 174, &c. & Lapis L. Apollin. pag. 231.



the pit, and wrapt in linnen cloth, wetted with rose-water; after two hours the whole body was rubbed with the unguentum-resumptirum of *Zacutus Lusitanus*. Others have recommended an ointment made with leaves of sowbread and hogs-lard, with which they rubbed the back-bone, and wrapt the whole body round with rollers on which this ointment had been spread; but he observes, that a new pit must be made every time this operation is repeated; and that the use of this kind of bath is only safe from the end of *May* to *October*. He philosophizes wonderfully on the effects of this bath, and thinks that the earth absorbs into itself the morbid taint, &c. But as the earth is very seldom dried, even by the summer heats, to such a depth, it is very probable, that the moist earth, which is the most disposed for emitting effluvia, being in contact with the body on every side, perhaps, is of service rather by exhaling a useful fragrance, than by absorbing any noxious miasmata from the diseased body.

We have already spoken of the use of balsamic abstersgents both internal and external.

In perusing the writings of many physicians, that I might learn what had ever been tried for the cure of a consumption, I observed that many placed great hopes of a cure in such remedies, as being swallowed, cure ulcers of the external parts of the body, which are objects of sight, and in which we may every day inspect the progress made in healing them. The remarkable efficacy of decoction of guaiacum in curing ulcers, and rottenness of the bones, is known to every one; and it was shewn in the preceding paragraph, that a phthisis had been cured by the use only of decoction of guaiacum. Of how great service mercury, and the various preparations of it are, is equally well known; so that the worst ulcers, and such as will resist all other remedies, will yield to this. *Van Helmont*\*, after he has raved, according to custom, against

against medical schools, adds, *quod si autem sputum cruentum præcessit ulcusque sit presens, disce parare phar-  
maca quibus Paracelsus tabem curavit. Ore tenus in-  
quam sumtis, cancerum & estiomena quævis sanantia  
quod est ulcus pulmonum curasse. Quidquid enim ulcu-  
s femoris aut pedis suo potu sanat quidni etiam idem in pul-  
mone faciet;* “ but if there has been a spitting of  
“ blood, and an ulcer is already formed, learn to  
“ make up those remedies with which *Paracelsus*  
“ cured the consumption. Take, I say, inwardly  
“ all those things which cure a cancer and corroding  
“ ulcers, this will cure an ulcer of the lungs; for  
“ that which being drank, cures an ulcer of the leg  
“ or foot, why should it not do the same thing of  
“ the lungs?” But he recommends the milder sort  
of these remedies, such as *mercurius diaphoreticus*,  
sweet as honey, and fixed, *lilii tinctura volatilis*. And  
elsewhere <sup>h</sup> he says, *sic & pulmonum ulcera solidantur  
per corallatum dulce mercurii diaphoretici, cujus virtute  
nempe Paracelsi epitaphium sonat, tabem sæpe restitutam  
fuisse;* “ thus also ulcers of the lungs are healed by  
“ *corallatum dulce merc. diaphor.* by the virtues of  
“ which, as we find recorded in *Paracelsus*’s epitaph,  
“ he often cured a consumption.” Perhaps some-  
thing like this might be tried by a prudent physician,  
but with great caution, and with the gentlest reme-  
dies of this kind; and such as do not cause great  
evacuations, which are always dangerous in weak  
exhausted bodies, and such as do not suddenly dis-  
solve and break the crasis of the fluids, as a phthisis,  
when it is near bringing on death, produces a putrid  
dissolution of the humours. We find that both an-  
cient and modern physicians, advise such remedies  
for a consumption as are useful in curing external  
ulcers; some have recommended an emulsion made  
of milk and honey, others, lime-water with milk;  
now all surgeons own the usefulness of honey, as a  
detergent

<sup>h</sup> Humid. Radical. pag. 575.



detergent in ulcers, and the efficacy of lime-water for drying such ulcers as run too much. When it was found of how much service the bark was, not only in a mortification, but also in a caries of the bones, and in obstinate ulcers, physicians applied it also for the cure of a phthisis. Dr. *Mead*<sup>i</sup> advises its being used, when either a spitting of blood, or a defluxion of thin phlegm returns at stated times, and orders it to be given before the disorder is expected to return; but he warns us, that there is great danger in taking the bark when an ulcer is already formed in the lungs. Nevertheless it appeared, from the observations contained in the preceding paragraph, when we treated of the usefulness of the bark in this disease, from its antiseptic qualities, that it sometimes was of great service; and, as was then mentioned, the famous *Torti*, although he did not expect much service from the bark, yet owns it did no harm.

As this difficult disease so often baffles the art of the physician, it is no wonder various methods should have been thought of. An anonymous author in the *Medical Essays*<sup>k</sup>, advises to attempt the cure of this disease by frequent bleedings, especially if the body be not yet quite exhausted: but he would not have the patient bled, before the vomica in the lungs is broken; and advises the assiduous use of detergents and expectorating remedies, before recourse is had to repeated bleedings; or at least he proposes this precaution by way of query: and he appears to have expected a double fruit from bleedings; the one a diminution of the quantity of blood infected with a purulent taint, while at the same time that which is wasted, is re-supplied by a proper and wholesome diet: and the other good consequence which he hopes is, that by abating the fever less pus would be daily generated; and that both these benefits would abundantly compensate for the loss of blood. On this account

<sup>i</sup> Mon. & Præc. Med. pag. 47, 48.

<sup>k</sup> Medical essays and observations, Tom. IV. pag. 418. and following pages.

account he thought, that the same methods might with proper caution be tried, even in those patients whose habit of body was already much exhausted by the disease: and he seems to be confirmed in this opinion, by having observed that in these cases the blood-vessels, although contracted, were yet tolerably full; and that frequently, even in the last stage of a consumption, the menstrual discharge returned at the usual periods: and he apprehends that bleedings are particularly serviceable to those, who were before of a plethoric habit and warm constitution. But as he feared crudities and dropical swellings might be the consequence of copious bleedings he advises, for preventing these bad effects, the use of the bark, on account of its corroborative qualities, together with frictions and gentle exercise. Dr Mead<sup>1</sup> confirms this method by his authority, and would have us check this disease in its beginning by bleeding, not once only, but repeatedly. His words are, *si nempe crassus, & niger, aut glutinosus profluxerit vitiosus dicitur, & utiliter effundi putatur; contra vero si ruber sit & pelluceat, integer habetur, neque ultro detrahitur*; “if the blood let out is thick, black, or viscid  
 “ it is accounted vitiated, and the losing it is useful  
 “ on the contrary, if it be red and transparent it is  
 “ reckoned sound, and no more is to be taken away.” Nay, (although this may perhaps appear a rash procedure) he advised this method, even when the body is almost exhausted and the flesh decayed. *Celsus*’ rule was, rather to try a hazardous remedy than none at all. *Et cum emolumento minuuntur vires ubi succurritur in vitio, quod robur corporis assiduo plus labefactabit*; “it may be useful to lower the strength, and  
 “ by this means weaken at the same time that morbid cause, which would continually impair the  
 “ strength more and more every day.” But he adds this caution, *si exulcerato pulmone vehemens febris urgeat, detractio quantum sustinere potest æger; juvabit.*  
 divide

<sup>1</sup> Monit. & Præcept. Med. pag. 50.



*divisâ nimirum in ea temporis spatia quæ ad corpus alen-*  
*dam necessaria sunt, istâ medicinâ;* “ if a violent fever  
 accompany an ulcer of the lungs, it may help the  
 patient to lose as much blood as his strength will  
 bear; this remedy being repeated, with intervals  
 of time between each bleeding, sufficient for al-  
 lowing a proper supply of nourishment.” After-  
 wards he affirms, that where things are not abso-  
 lutely desperate this method of cure has succeeded.  
 But that this treatment did not always succeed ap-  
 pears from hence, that he presently subjoins an apo-  
 logy for ill success; *sin secus acciderit eum medicus occi-*  
*disse minime censori debet, qui corruptis jam visceribus*  
*nequaquam servari potuit;* “ but if the event prove  
 unfortunate, the physician cannot be charged with  
 taking away a life, which the corrupt state of the  
 bowels made it impossible to preserve.” Dr.  
*Pringle*<sup>m</sup> confirms the propriety of this method by  
 his observations; yet he says, by way of caution, that  
 he would not establish from thence a general rule for  
 the cure of this disease, without paying any regard  
 to the patient’s strength. He likewise avers, that he  
 had seen very great service done, by letting blood fre-  
 quently in small quantities at a time, in the cure of  
 wounds, when from pus re-absorbed a hectic was  
 produced; but this was certain, that a putrid caco-  
 chymia was lessened by repeated bleedings: at the  
 same time he observes, that the patients are not so  
 much relieved on the first, as on the second and third  
 night after bleeding.

The same author, on the strength of repeated ex-  
 periments, recommends, as exceeding useful, the ap-  
 plying of a seton to that side of the thorax which  
 seems to be most affected: he tried this principally on  
 such patients, who too much dreaded the too great  
 loss of blood, and therefore were loth to admit bleed-  
 ing as frequently as was necessary. We took notice

of

<sup>m</sup> Observations on the diseases of the army, Part III. Cap. III.  
 pag. 190, & seq.

of a very happy effect of a seton applied near the suppurated part on another occasion, at §. 805. in the history of the pleurisy. I cannot venture to pronounce any thing, from my own experience, concerning this method of curing a consumption: I have once seen it used, and not without success; but although the patient, in the prime of life, easily bore the loss of blood, and the disease so far abated, and gave so much respite, as that the strength began to return, yet the disorder gained head again, and he has now been ill for several months at the time I write this relation; and the pulse is so weak, and the veins so relaxed, that it does not seem at all safe to diminish any further the little blood yet left in the vessels.

I have learned, however, by a wonderful instance, that the body will bear very copious bleedings with safety to life. I know a noble lady, who having been subject to frequent spasmodic anxieties, sought relief in the paroxysm by bleeding; and at last, against the persuasions of her physicians, has now, for many years, been let blood almost every day, and sometimes twice a day, losing more or less blood according to the urgency of the complaint; being firmly persuaded, she should quickly be suffocated but for this method; and she is still alive, but languid and confined to her bed.

The last indication of cure is, after the ulcer of the lungs is cleansed to close it up; and this we are especially to think of, when we see that the matter spit up has all the qualities of good pus, and that the quantity diminishes daily; while, at the same time, the purulent cacochymia of the blood being corrected, the hectic is much abated or has quite ceased. In ulcers of the external parts, which are objects of sight, we see that the flesh grows again under laudable pus, and thus the consolidation of the wound proceeds with all possible success. In such a state of the ulcer skilful surgeons change the dressings seldomer,  
and



and suck up the moisture with soft feathers. They never wipe it off roughly, lest they should destroy the tender nascent vessels; they soon cover the wound lest the air should hurt it, either by drying it or by cold: softly, they keep the injured part quiet. The same things are proper in this case also, as far as the condition of the part affected allows. We cannot indeed procure perfect rest for the lungs, nor exclude the air, as respiration is absolutely necessary to life; besides, the pus cannot be drawn from an ulcer of the lungs but by a cough, which always agitates the breast and shakes the lungs; whence we shewed before, how difficult it is to cure this disease. All that art can perform is to abate these inconveniencies, by taking care that the breathing be as quiet as possible, that the cough be hushed for a long time; that it be not more vehement than is necessary; that digested pus may be brought out by spitting, after it has been collected and remained quiet in the lungs for some time; for unless this be done, the ulcerated place is exasperated, and the healing impeded by the frequent cough. Wherefore very soft decoctions of such things as tend to heal, and to blunt any acrimony are given; of which kind there is a formula in our author's *Materia Medica* under this article. But the chief reliance is on anodynes given towards evening; for then the cough is usually most troublesome, and is generally dry, or only some mucus is spit out, and none or very little digested pus. These anodynes appease the cough, procure gentle sleep, which recruits the strength, and in the morning digested pus is spit up easily with a gentle cough. If the prudent use of anodynes be neglected in the cure of this disease, I can scarce ever hope for success. Some are afraid, lest the spitting should be suppressed by opiates, and the lungs be more stuffed up: but I can truly assert, that after a quiet sleep I have always observed more easy expectoration in phthysical persons in the morning, and that the pus expectorated had every requisite

quisite good quality; so that there is all the reason to hope, that under good pus remaining for some hours in the ulcer, the healing will begin in the same manner as we see it does in ulcers of the external parts. The method indeed makes the patient costive, but this is of no bad consequence in this stage of the disease, and a stool may easily be procured by an emollient clyster, if any danger be feared from too violent efforts for expelling the hardened fæces. In the *Materia Medica* under this article, four grains of the pilulæ de cynoglossa are prescribed to be taken in the evening; but as this quantity is but equal to half a grain of opium, it will not always be sufficient, that the quantity must be increased as there is occasion. Certainly the ancients used opium very freely in the cure of a consumption. *Aëtius*<sup>n</sup> advises, for the cure of consumptive persons, (besides theriac, mithridate, antidotum pæoniæ, antidotum esdræ, &c. which contain opium) a composition, the sixth part of which is pure opium: he orders a catapotia of the size of a vetch, *quorum tria aut quinque assomnum exhibet devoranda; calida aqua insuper adforbendum data; & admirandam vim videbis;* “these he gives three or five to be taken at bed time drinking warm water afterwards, and you will see (says he) a wonderful effect.” Prudence bids us begin by a small dose of such remedies, increasing the quantity gradually as there shall be occasion. But all these compositions of the ancients contained pepper, castoreum, and other warm things, for correcting the noxious quality of the opium, which was believed to be cold in the fourth degree: but the acrid spices are not very proper in this disease; as as the efficacy of the poppy-juice only is wanted here that may be used alone in various forms, or more simple compositions which are not heating, and whose chief efficacy is the opium, as this principal ingredient may be used, of which various formulæ are to be found in various Dispensaries.



## S E C T. MCCXI.

THE third indication is answered by ptisans, broths, and various preparations of milk.

Heretofore, at §. 1208. those things were enumerated which regarded the cure of this disease; and in the third number thereof, the diet suitable to consumptive persons was considered; of which the general rules were, that such aliments should be recommended as would easily be digested and subdued by a weak body, and would afford such chyle as might easily pass with the blood through the vessels of the lungs. This rule excludes all tough and viscid food from being used by consumptive persons: the food likewise was advised to be such as contained sufficient nutriment, and did not incline to putridity.

Ptisans obtain a place in the food of consumptive persons. But although ptisans may be made with various kinds of corn, for *Hippocrates* mentions a ptisan of wheat, and *Horace* ° speaks of one made of rice, *Tu cessas? agetum sume hoc ptisanarium oryzæ*; “dost thou layest thou? haste and take this rice ptisan:” yet custom has caused it to be understood, unless some particular kind of corn be named, that when a ptisan is ordered, it is supposed to be made of barley. How much *Hippocrates* esteemed this is evident from numerous passages in his works, but principally from his treatise on diet in acute disorders. It was thus prepared among the ancients: they first soaked the barley in water, then they rubbed this soaked barley between their hands in a mortar, till the husk was peeled off. This is more commodiously performed in our time by the help of mills; and then the grain freed from the husk is *hordeum depuratum*, or *decor-*

*ticatum*, in the shops; but they did not pound these barley grains, but boiled them whole in water till they began to swell; then they sometimes added a little vinegar and salt. If now this decoction of barley was given with the grains in it, it was called the whole ptisan; but if the water was strained off from the barley, it was then called juice of ptisan; and if it was boiled to a greater thickness, it was called cream of ptisan; which is made at this day in another manner: the barley softened by boiling is rubbed with a wooden spoon over a sieve, so that great part of the substance of the barley passes through the meshes of the sieve, and then is mixed with the decoction; and thus a kind of barley pap is made, which has the consistence of cream, and affords a mild moist, softening food, quite contrary to putridity; and it is inclined to turn sour, and that so soon, that in summer, decoction of barley cannot be kept for twenty-four hours, without growing sour: nor has barley ptisan too great a viscosity; the ancients would not have it bruised in a mortar, because then it would have communicated a farinaceous viscosity to the decoction, which it does not if it be boiled whole. It is true, indeed, that they also made use of barley bruised or ground, but then they had taken off its mealy viscosity by other artifices beforehand. Thus, for instance, if barley grains moistened with water be left in a warm place, they will begin to grow; if then they are immediately dried by a strong heat, the growth is stopt; but by the very beginning of this shooting or growth, the viscosity of the meal is so attenuated that these grains reduced to a coarse flour, if boiled in water, do not give a thick viscid decoction, but limpid and fragrant, as is evident from the brewing of beer, which is made of barley so managed, and is commonly called malt. *Galen* made a sort of pap with fresh barley a little fried, which he recommended strongly; and which being steeped in water, afforded a pleasant and nourishing drink. In this instance the



The operation is performed on the barley, as commonly is on coffee; for if the crude coffee berries be steeped or boiled in water, they produce a nauseous liquor; but if they be roasted first, the infusion made from them has a most delightful fragrance. The same effect is produced by roasting the barley in the same manner. But as beer is also made from barley, hence in these nations where beer is the common drink, it is also allowed to persons in this distemper. But it must be, as *Bennet*<sup>p</sup> says, *cerevisia illupulata puratissima mediæ ætatis*; "beer without hops, very clear and not very old;" for hops are used in brewing beer to prevent its turning sour: but at the same time a bitter taste is produced, which gradually diminishes as the beer grows older, and then the beer is more fragrant; but at the same time it intoxicates if it be drunk plentifully, and in that case it would certainly be pernicious in this disorder. But when it is new and clear it has all the utility of ptisan, and has an additional good quality, that by the growth begun in the making of the malt, the viscid lentor of the barley is much diminished: hence certainly such beer affords a useful drink, especially to such as are accustomed to it. In those places where beer is the common drink, they know how to make it medicinal in many disorders, by adding various herbs. Thus *Bennet*<sup>q</sup> advises, that for consumptive persons the beer should, instead of hops, have confound-foot, nettle-tops, marsh-mallows, endive, purslane, &c. boiled in it.

Vinegar and a little salt, were often added to the ptisan of the ancients, especially in acute diseases; but as in phthysical cases, especially if there be a very troublesome violent cough, we abstain from these; we correct the insipidity of barley ptisan, by adding quorice, and other such things as are most agreeable to the patient's palate. At this day, as it is well known, all decoctions which are used as com-

212 Of a PHTHISIS PULMONALIS. Sect. 1211.  
 mon drink in various diseases, are called ptisans; although neither barley, or any other kind of corn, have been boiled in them. Barley, however, was counted by the ancients among the ὀλιγότροφα, or foods of light nourishment: whence also, among the *Romans*, as a mark of ignominy, barley was given instead of wheat, to those cohorts which had lost their ensigns. And in *Polybius*, we find the κριθοφαγία, or barley eating, one of the military punishments; as though they who had behaved cowardly in war, were unworthy of the food of stout men<sup>r</sup>. This seems to have been the reason, why the ancients preferred barley to wheat, for making ptisan for the sick; as they had learnt by observation, that wheat was much more tenacious, and more difficult of digestion; of which, by newer observations, we now understand the cause. *Beccarius* diluted in water flour of wheat, entirely clear of all the bran, and so washed out the finest part of the flour of the wheat; which indeed made the water thick, but by a very slight shaking, was diffused all over the water, and made what is called starch. But this part of the flour being washed away, another substance subsides in the vessel, which being rubbed in the water, and squeezed with the hands, by degrees, is kneaded in a soft and very tenacious mass, which will no longer mix with, and affords a very tenacious glue. But that which seems most amazing is, that this glutinous mass, chemically examined, exhibits the product of the parts of animals, not of vegetables, viz. a urinous spirit, oils and as great a quantity of volatile alkaline salt as is produced from an equal weight of hartshorn. But when he examined the flour of beans, barley, and several other kinds of meal, in the same manner, he did not find in any of them, excepting spelt, that glutinous part not to be mixed with water, which has an animal, not a vegetable, quality.

Hence

<sup>r</sup> Nonnius de re cibariâ, pag. 24.



Hence we understand the reason why *Galen*, as is mentioned on another occasion, §. 586. when, going into the country with two other youths of his own age, for want of other food, being hungry, greedily devoured some boiled wheat, slightly seasoned with salt; on which he found a weight in his stomach, had a loathing of food, and a costiveness. About a year since, some boys eating greedily of ripe wheat, in harvest time, were all taken ill, and languished a long time, the belly being stuffed up and swelled, and two who had eat the greatest quantity died dropfical; the others were recovered by purging physic, which expelled the putrid saburra, and brought down the swelling of the belly.

However, *Hippocrates* every where recommends the juice of ptisan in purulent and consumptive cases. Besides ptisans, broths are also deservedly in esteem; for the flesh of slaughtered animals contains, besides the red blood, the other fluids already digested in the body of an healthy animal, and of course copious materials for nourishment, and such as easily dissolve in water, and which may be farther subdued and assimilated, even by the action of weak vessels and viscera. Concerning the cautions to be observed, both in making and using these broths, the reader is referred to what was mentioned §. 28. N° 1. It is indeed true, that all food prepared from the flesh of animals, has a tendency to grow putrid; which is hurtful, as was said before, in this disease: but this tendency may be easily corrected, if the broths have orange juice squeezed into them, or cream of barley, or of rice, be added unto them, which have a natural tendency opposite to putrefaction. Besides, the flesh of animals which feed only on vegetables, afford broths less putrescent than those which are made of the flesh of carnivorous animals. Broths made of the flesh of turtles, and frogs, have been recommended by many physicians in this disorder; and

*Bianchi*\*, in his treatise, in which he opposes the vegetable diet advised by *Cocchi*, attests that he cured many patients with broth of this kind.

The use of milk especially, is recommended by all physicians in this disorder; nutrition is defective in this disease, and all the plumpness of the body gradually wastes away. It is well known, that the action of the lungs is of the greatest importance, in order that chyle produced from the food may be assimilated to the humours of the body; whence what is daily wasted, both in the solids and fluids, may be re-supplied. But in this disease, the lungs are preyed upon by an ulcer, a collection of purulent matter lodges in them, and a troublesome cough agitates them; so that it is not strange, that the efficacy of their action should be diminished. Nothing therefore appears more rational, than that milk should be used as food, as it has already undergone the action of the vasa and viscera, in the body of a healthy animal, and is rendered apt to receive in a few hours, the qualities of the animal fluids. Before, §. 28. mention was made of the salutary effects of milk, in bodies so weak as not to be able by the strength of their own vessels and viscera, to prepare proper nutritious juices: then we recommended, above other kinds of milks, the milk drawn from the breasts of a healthy vigorous woman; the use of which, *Galen* mentions as ancient even in his time, and speaks of it with approbation. There are enumerated instances also, in medical history, which shew the great utility of womens milk in the cure of a consumption; to which numerous like instances might be added, if any doubt remained in this case, and some whose truth I myself could attest. A young lady of high quality, has used milk for a year and more with so good effect, that the cough, the purulent spitting, weakness, and emaciation, are quite ceased, and she is alive in health and vigour.

Physicians

\* Discorso, se il vitto Pythagorico, &c. pag. 61.



Physicians are used to supply the want of breast milk, by asses milk, which in thinness and sweetness of taste, approaches nearest to womens milk; the next best to this is goats milk; and sometimes they use cows milk, which however is thicker: but as there is a subtle juice in milk, which soon exhales and perishes in the air, hence physicians prudently advise, that the milk should be received, as soon as drawn from the animal, into a clean warm vessel; and the vessel being covered, it should be brought directly to the patient, that he may drink the milk warm, especially soon in the morning, and sleep two or three hours after having drank it, if possible: the same caution should be observed, if the patient drinks womens breast milk; and this should be repeated three or four times a day. *Aretæus* describes in a few words, the excellent qualities of milk, in a fragment<sup>t</sup> which is left of him, treating of the cure of a consumption; these are his words, *lac vero assumtu suave, potu facillimum, nutritu solidum, & quâ libet escâ a pueritiâ familiaris est; præterea visui colore delectabili, medicamen arteriam non asperans, guttur lævigans, ad ejiciendam pituitam facilem spiritum reddens, inferiorem exitum lubricum efficiens, ulceribus dulce subsidium, & quolibet alio benignius. Si quis multum lactis potet, nullo alio eget alimento;* “milk is pleasant  
“to the taste, easy to be drank, affording a substantial nourishment, and more familiar, from  
“childhood, to the body, than any other food; besides, its colour is agreeable to the sight; it causes  
“no irritation to the organs of respiration; it lubricates the throat, and makes the expectoration of  
“phlegm easy; it keeps the bowels lax; it is a pleasant remedy for ulcers, and more mild and salutary than any other. If any one drinks a great  
“deal of milk he will need no other food.” But afterwards he advises ptisans, and foods prepared with milk.

P 4

We

\* De morb. diuturn. curat. Lib. I. Cap. viii. pag. 127.

We must not however conceal, that many of the very best physicians have not allowed the use of milk in consumptive cases, without some caution. *Hippocrates*\*, after having enumerated many diseases in which he did not think the use of milk adviseable, says, *at tabidis lac dare convenit non admodum valde febricitantibus, & in febribus diuturnis & lentis si prædictorum signorum nullum adfuerit & præter rationem extenuatis*; “it is proper to give milk to consumptive persons, if they are not very feverish; and in long and slow fevers, if there be none of the fore-mentioned symptoms; and also to those who are extraordinarily emaciated.” It is well known, that milk is compounded of three substances. 1. Butter, or the fat creamy part. 2. Cheese, and 3. Thin whey; which last dilutes the two first, and mixes itself equally with both. The creamy part is of its own nature acedcent, but by a considerable febrile heat, it may acquire a rancid acrimony, especially if all the serous part be separated from the fat part, for then nothing is left but fat butter. The cheesy part, which of itself approaches nearer to the animal qualities, is capable of acquiring a great acrimony, and growing putrid, as appears in old cheese, which when burnt, emits a smell like that of the horns of animals. But as long as these three parts, the cream, the cheese, and the serum, remain combined, the milk does not grow putrid, but tends to acidity; the other depravations of it are only observed after the parts are separated, which were mixed before. And this is what physicians appear to have dreaded in consumptive persons, from the use of milk; that is to say, when they had a strong fever on them; as *Trallian*† expressly remarks, when he is advising consumptive persons to eat milk; *si non vehementer febricitant, si enim multo infestante calore exhibeatur non item nutrire aut lumentare poterit. Nam ab eo*

quod

\* Sect. V. Aphor. N<sup>o</sup> 64. Charter. Tom. IX. pag. 237.  
 † Lib. VII. Cap. 11. pag. 309.



*quod contra naturam est vincitur, & in alienam corruptricemque qualitatem mutatur: ubi calor febrilis moderatior evaserit, lac ipsis exhiberi debet;* “if they are not very feverish, for if milk be taken while a vehement heat afflicts the body, it will not equally nourish and moisten the parts, as if there were no such vehement heat: for the quality of the milk is overborne by the morbid disposition, and it assumes a foreign and corruptible quality: when the feverish heat is abated, milk should be given to the patients.”

From these quotations it is sufficiently evident, that the use of milk was then only doubtful, when there was a strong fever; but that they did not abstain from milk on account of that slight, continual, habitual fever, usually called a hectic. For the same reason, many physicians have advised, that milk should be drank in the morning, as towards evening the hectic is more intense. *Bennet*<sup>x</sup> also does not seem to have approved of milk at all times, in the cure of a consumption: in the beginning of the disease, he advises that milk should be given, *assuetis optime constitutis, avidèque petentibus;* “to such as have been accustomed to it, and are of a good constitution, and eagerly long for it.” But, *ejus usum verè phthisis prorsus interdixisse, necesse duxit;* “he thought it necessary absolutely to forbid the use of it to persons in a confirmed consumption.”

Hence he thought, that the whey of milk alone (the cheefy and creamy part being separated from it) answered every indication: whence, in another place<sup>y</sup>, where he treats of the drink suitable to consumptive persons, he says, *lac quidem sine dispendio aliquoties forsan in usum ducitur, ejus vero serum præscriptorum selectissimis alteratum, nullam incommoditatis suspicionem præ se fert;* “milk may perhaps, sometimes, be used without damage; but the whey, medicated by select remedies, is not liable to produce  
“any

<sup>x</sup> Tabid. Theatr. pag. 72.

<sup>y</sup> Ibid. pag. 151.

“ any kind of inconvenience.” And in the place before quoted, he relates two cases of patients, in whom, from the use of milk, the stomach and intestines were found full of hard curds.

It is true, indeed, as will be mentioned hereafter, in the section of the rheumatism, that whey is capable of nourishing; but it is also true, that the cheesy part is more subdued and assimilated to the animal juices; and therefore when the body fails of being nourished, because it wants strength any longer to make good humours by the action of its own viscera, it will be of use to apply such food as has already been prepared in the body of a healthy animal. Besides, in consumptive persons, the whole fat of the body is wasted, so that the cream of milk seems very proper for supplying this defect; and, indeed, so much the more, as the cream may be diluted with water, while the whey itself, impregnated with the native salt of the milk, is intimately combined with it; and hence may be considered as a soap, in which there is indeed plenty of an oily or fat part, but so united to the salt, that it can be all dissolved in water and watery liquors.

At the same time there is this convenience in it, that with a little trouble, various medical intentions may be answered by it. If the disposition of the fluids be very acid, *cremor lactis balsamus est interno, externoque usu omnium optimus, amicus corpori, acre quodcumque mitificans, hinc phthisicis, nephriticis, arthriticis, summum solamen; ut & vulneri, ulceri aspero egregium*<sup>2</sup>; “ the cream of milk is excellent balsam, both for internal and external use, “ friendly to the body, softening all acrimony; “ hence it is a very great reliever in phthisical, arthritic, and nephritic cases; and also of excellent service to a wound, and an inflamed and exasperated ulcer.” If on account of heat, or a considerable fever, there might be reason to fear that  
cream

<sup>2</sup> H. Boerh. Chem. Tom. II. proc. 99. pag. 319.



cream would grow rancid, *lac defloratum, remedium incomparabile ad sanandos morbos in oberis bilorisque oleo arens* <sup>a</sup>; “skimmed milk (which is without the oily fat part) is an admirable remedy for curing disorders in corpulent persons, and bilious constitutions.” If a coagulum should be feared from the cheesy part, the milk might be turned, and thin whey made of it, in which the cream might be diluted, if the medical indications should seem to require this. However, there is an easy method of hindering the cheesy particles from separating too soon in the primæ viæ, from the other parts of the milk, and forming a hard curd; which is, to swallow five grains of *Venice* soap before the milk is drank. If there be reason to apprehend an acrid acrimony in the primæ viæ, absorbent powders taken along with the milk, will prevent this evil or correct it.

All that we have said, and the almost unanimous consent of the most celebrated physicians, have caused me never to be fearful of giving milk to consumptive persons. Womens milk, as nearest the human constitution, is the best; asses milk comes nearest it in thinness and sweetness; next these, goats and sheeps milk are recommended; cows milk, which is fatter and more nourishing than all these, has also its use, especially if the cows feed plentifully in good pastures; it may at least be of service to those who dislike the other kinds of milk, or cannot afford them. If the weak body, or oppressed lungs, will not bear milk by itself, it may be given diluted with decoction of barley, or the whey may be drank, which is also very good for detarging the ulcer. Thus also the ancient physicians acted, when they advised asses milk, as being thinner than cows milk, when the ulcer was to be cleansed, and the body to be supported with light nourishment; but when, after the

ulcer

<sup>a</sup> Ibidem.

220 Of a PHTHISIS PULMONALIS. Sect. 1212.  
ulcer was cleansed, a healing of the wound was hoped, then they used cows milk.

## S E C T. MCCXII.

**T**HE palliative cure of this disease principally respects the cough, the anxiety, and the diarrhœa.

It is indeed true, that the most desirable case is that which removes the disease, which causes those troublesome symptoms ; but this is not always in the power of art. When therefore, a physician having no longer any hope of rooting out the disease, turns all his attention to some method of mitigating the troublesome symptoms, this method is called the palliative cure. I have known indeed, some austere philosophers, who condemned this part of physic which treats of the palliative cure, and called it the nurse of diseases : for they thought it wrong that incurable diseases should be protracted ; and that every one had his office and duty in society, which when persons were no longer able to execute, it was better both for them and the public, that they should leave the world ; and that there ought not to be so much leisure allowed to any one in life, as that he should be employed solely in taking care of his own health. But however, humanity requires us to relieve those wretched persons whom we despair of recovering and to mitigate those sufferings of which we cannot entirely remove the cause ; that the little which remains of life, may pass more quietly, till death put an end to their misery. I have seen some of these fastidious philosophers who talked so haughtily when in health, imploring relief of every one, when in the same kind of distress themselves. Add to this, that almost all consumptive persons, although forewarned of the fatal issue of the disease, are lured by vain hope almost to the last breath, and eagerly desire re-



edies from the physician ; and it would be cruel to deny these unhappy persons that comfort.

The three symptoms which principally require to be mitigated, are the vexatious cough, the insupportable anxiety, and the diarrhœa.

## S E C T. MCCXIII.

**T**HESE are to be relieved by the diet of §. 1211. by opiates cautiously administered ; by warm liquids.

There is always a cough in this disease ; for the nerves of the lungs, even in a healthy person, keep faithful watch to prevent any thing from entering that viscus which may injure it. By exciting a cough, they instantly shake off every thing of this kind ; even a drop of water falling into the aspera arteria occasions a violent cough ; the ulcerated part of the lungs is perpetually irritated by the pus itself, especially if it become thin and sharp, as is so frequently the case in an incurable consumption ; nay, the cough produces a cough, as it exasperates the ulcer by the perpetual agitation of the lungs.

But the cough increases also principally towards evening, when the hectic is more intense, and the blood moves with greater velocity through those vessels of the lungs which remain yet unobstructed ; which brings on also an intolerable oppression or anxiety, from the increased difficulty of the passage of the blood : all these symptoms are exceedingly augmented, if a great quantity of crude chyle enters the lungs together with the venous blood : wherefore that these evils may be rendered more tolerable, the diet prescribed §. 1211. must be observed ; and at the same time, care must be taken that even the most wholesome food be not eat in great quantities at a time, as even the plenty only of good chyle may be

hurtful here; so that the food is to be taken at intervals, and in small quantities at a time. At the same time, plenty of thin warm liquids likewise drank at intervals, so dilutes all the fluids, that they are able more easily to pass through the vessels of the lungs, and thus help to abate the anxiety. Opiates prudently administered, are almost the only remedy for appeasing the cough, and at the same time they prevent or stop the diarrhœa, at least for some time.

It was said before, that in the last stage of a consumption, the whole blood is so corrupted and dissolved by the pus being re-absorbed, that the fluids, escaping through the meseraic vessels, cause a most putrid diarrhœa, which soon puts an end to the disease and life together; there will then certainly be great perplexities in the physician's way: to prevent these putrid fluids from discharging themselves from the body is dangerous; on the other hand, if the diarrhœa continues, all the strength absolutely fails, and the whole body is exhausted: pains also, often come on in the abdomen, and an exceeding troublesome and constant tenesmus, which farther exhausts the strength. Almost the only thing physicians are accustomed to try, in order to alleviate the distress of this last short stage of the disease, is a clyster, which may be thus prepared: let a drachm of the purest turpentine be intimately mixed, by rubbing in a glass mortar, with the yolk of an egg; add two ounces of theriaca andromachi, then dilute these with four ounces of new milk, and throw them up; the patient must be told to keep the clyster as long as he can, that the pain and irritation of the rectum may be asswaged by this topical anodyne remedy.



*Other* CONSUMPTIONS.

S E C T. MCCXIV.

**A**S a consumption may be the effect of an ulcer of the lungs, so it may also proceed from ulcers of the liver, spleen, pancreas, mesentery, kidneys, uterus, bladder, &c. The diagnostics, prognostics, effects, cure, and palliation whereof, are easily deduced from the same sources, by him who understands the natural operations of each viscus.

It is certain, that if a collection of pus be lodged in any other viscus, like evils may follow, and are to be expected, as those which are apprehended from an ulcer of the lungs. It is indeed true that the lungs are a vital part, and therefore, for this cause alone, their diseases are justly esteemed more dangerous. However, the curative indications are nearly the same as those which were enumerated §. 1208. for such abscesses are presently to be brought to maturity, and when mature to be opened or made to break, and the pus is to be discharged by the most convenient passages. In an ulcer of the lungs the pus must be drawn up from the aspera arteria; in an abscess of the liver, there is an easier passage into the intestines; and the same thing is true of the spleen and pancreas: ulcers of the kidneys and bladder are to be cleansed by the urinary passages; those of the uterus must be discharged through the vagina; and so of the rest: but the same cautions are required, and the same remedies adviseable, to defend the blood from the purulent infection; it is also equally right to keep to such a diet, as consists of aliments easy of digestion and not liable to grow putrid. Besides, in  
the

the chapter of the hepatitis and nephritis, we treated concerning abscesses in these viscera; as also in the section of the inflammation of the intestines; to which observations it will be easy to reduce what may be said concerning those abscesses which are formed in the spleen, pancreas, and mesentery. In treating of the diseases attending child-birth, we shall speak of the inflammation of the uterus, and all the consequences of that disease. When we come to consider the stone, we shall also speak of the ulcer in the bladder, which sometimes brings on an hectic fever and a consumption. From hence it appears, that there is no necessity whatever to treat more particularly of the consumption, as caused by collections of pus lodged in these various parts of the body. Add to this, that not unfrequently a vomica is formed in the lungs, when pus, being re-absorbed into the blood from other parts of the body, is deposited upon this viscus.

With regard to the diagnostics of each kind of phthisis, these may be obtained, if the situation and natural operations of each of the viscera are known from anatomy. From the same sources may also be deduced the various methods, by which remedies may be applied to the part affected. If, for instance, an abscess be formed in the liver, and we have hopes that it may tend to discharge itself outwardly, then the region of the liver should be fomented with softening fomentations and cataplasms; but as the pancreas is situated under the stomach, a like discharge cannot be hoped in abscesses thereof. Ulcers of the bladder, uterus and vagina, may be cleansed by injections; but a vomica of the kidneys, after it is broke, may more easily be destroyed by mild, balsamic diuretics, as almost all natural balsams, in a short time, communicate their peculiar smell to the urine, as has been said. The prognostics are likewise to be drawn from the known construction and uses of the several viscera: for instance, ulcers of the kidneys



neys and bladder may be borne much longer, and even  
e much more easily cured, than those of the liver  
nd spleen; as there is a much easier passage for the  
ischarge of the pus from the kidneys and bladder  
han from the liver and spleen, and the urine itself  
erpetually washes these ulcerated parts; and as it is  
so within the reach of our art to allay the acrimony  
f the urine, and to imbue it with medical virtues,  
c. Besides, the liver and spleen being of a very soft  
ubstance, are much more easily wasted by an ulcer;  
nd there is always a danger, lest a vomica in these  
arts should break in such a manner, as that the pus,  
ischarging itself into the cavity of the abdomen,  
nd being retained there, should cause a purulent  
scites, the cure of which is scarce ever to be hoped.

It appears, therefore, that whatever regards the  
arious kinds of phthifical disorders, is easily dedu-  
ble from what has already been observed.

*The* D R O P S Y.

## S E C T. MCCXV.

**W**HEN watery serum is extravasated and lodged in the cavities of the body, when, stagnating any where, it distends the vessels too much which contain it, this disease is called a dropfy.

A dropfy is a general name, under which many species of the same disease are comprehended; the diversity of which principally takes rise from the various parts of the body which this watery serum occupies, and from whence it obtains, as will be seen by various names. *Celsus* has well said <sup>b</sup>, *communis tamen omnium est humoris nimia abundantia*; “the superabundance of some fluid is however common to all of them,” which fluid is usually thin and watery, and thence the disease has its name, being wont to be called ὕδρωψ, ὕδρεος, ὑδρίασις, as also παρέγχυσις; which last name principally belongs to the dropfy called anasarca, when the water is as it were circumfused all over the whole body. Whence also *Horace* <sup>c</sup> calls it a dropfy *aquosus languor*.

It is well enough known to chymists, that water does not only abound in the healthy fluids, but is so intimately combined also with the solids, that the horns of stags, which after having been kept for ages seem altogether void of moisture, yet afford plenty of water when distilled in a retort. But when, from any cause, the water is too redundant in our fluids, or the intimate union and combination of the water, both with the fluids and solids, is dissolved, then there is some danger, lest the water should break from the vessels.

<sup>b</sup> Lib. III. Cap. xxi. pag. 161.    <sup>c</sup> Carmin. Lib. Odar. 2.



vessels through which it moves, and be effused into the cavities of the body; or if an issue be denied it from the extremities of the vessels, lest it should distend these vessels, and thus produce the dropsy either way, unless it be dissipated and exhaled from the body by some other passages, and thus the accumulation of watery serum prevented.

Before, when we treated of inflammatory disorders, it was observed, that sometimes so great an inflammatory viscosity of the blood was produced, that watery liquors could no longer be closely mixed with the blood, become too thick; and hence that they were soon expelled from the body, either by thin watery urine or by sweats, which skilful physicians deservedly accounted a bad presage: but if the water swallowed, not being capable of mixing intimately with the blood, is separated therefrom, and nevertheless does not find a passage out of the body, this watery serum will be collected, and may cause a dropsy on this account. Hereafter, §. 1229. we shall find very inflammatory acute diseases, enumerated among the causes of a dropsy. A dropical swelling of the legs and feet has not unfrequently been observed, after persons have undergone acute diseases. The same thing happens, when the lighter parts of the blood being dissipated, the rest an atrabilious, thick, oily, earthly fluid, pervades the vessels, (see §. 1092.) which equally renders the intimate combination of the water with the blood difficult; whence (§. 1229.) melancholy is enumerated among the causes of a dropsy, together with the scurvy; in which disease a thickness and viscosity of the humours is accounted one cause, as was said §. 1153.

But although this disease derives its name from water, yet that fluid, which in dropical persons is accumulated in the larger and smaller cavities of the body, has all the appearances of serum mixed with blood. Hence it is called a *watery serum*, because it is not pure serum; for when put on the fire, part

thereof evaporates in the air, and part congeals like the white of an egg<sup>d</sup>: which effects are known to be produced by fire also upon the serum of the blood and according to the greater or lesser proportion which this serum bears to the thinner lymph. The coagulum is also observed to prevail in the waters of dropfical persons. It has sometimes happened that I have examined, after the operation of tapping, the waters drawn from the belly; and I have sometimes found a considerable quantity of this coagulated serum, when the waters were put in a clean vessel on the fire; sometimes they were only thickened, by visible flakes of this coagulated serum swimming in them; sometimes the colour of them was only made milky, perhaps on account of the small quantity of serum mixed with a great quantity of lymph. Certainly if the serum of human blood be put on the fire, it thickens into a mass so solid, as to be capable of being cut like the white of an egg; but if boiling water be poured upon it, it turns the water to milky colour<sup>e</sup>. No one at this day doubts that there are vessels in the body, through which fluids, thinner than red blood, circulate; so that if the free passage of these fluids through these vessels be obstructed, the vessels will be distended, and thus a dropfical swelling will be produced. But those arterial vessels which transmit a fluid thinner than red blood, at the very beginning, where however they are the most ample, have so small a diameter, that they cannot in their nature admit a globule of red blood; so that very great swellings can scarcely be caused from obstructions of these vessels. But the case is somewhat different in the venous vessels, which carry the lymph back towards the heart, and pour it into the large veins, which may be accounted the vena cava of the lymph, which carries back the blood, or into the duct

<sup>d</sup> Academ. des Sciences l'An. 1701. Mem. pag. 200. & 1702. Mem. pag. 668. <sup>e</sup> De Haen ratio medendi, Tom. I. pag. 101, & 102.



uctus thoracicus<sup>f</sup>. These veins, before they deliver the lymph to the common receptacle, are become of so inconsiderable size; although, collapsing after death, they almost escape the sight, yet by inflation, injection, and other artifices, they may be rendered conspicuous. *Bertin*<sup>g</sup>, an excellent anatomist, not only has observed many lymphatics in the kidneys, but also attests, that he saw a large trunk of a lymphatic half as big as a goose-quill. At the same time he candidly informs the reader, that the lymphatics are most conspicuous to common sight without using any art, if the body be opened when it swells from the putrefaction beginning; for then the cavities of the body swell from the air which the putrefaction causes to expand, which obtains not only in the larger cavities, but also in the cells of the adipose membrane. This is the reason why the bodies of drowned persons, when beginning to putrify, float again, the tumid abdomen principally rising above the surface of the water; but when the abdomen has burst, an intolerable stench disperses itself all-round, and the body sinks again. But as the lymphatics begin to grow turgid, at the same time that the cellular membrane is distended by the air, generated, or rather set loose by putrefaction, he concludes, that even in living bodies there is a communication between the lymphatics and the cellular membrane; and that hence the reason is plain why, when the lymphatics are diseased, the cellular membrane swells with extravasated lymph.

If therefore, from any cause, the free return of the venous lymph towards the heart be impeded, the larger and smaller cavities of the body may be filled with water, and the lymphatic vessels will be distended. But as anatomists have so evidently discovered valves in these vessels, it will be difficult to force the lymph back in these vessels, and part be-

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tween

<sup>f</sup> Herm. Boerh. Institut. Med. §. 126.  
sciences, 1744. Mem. pag. 114.

<sup>g</sup> Academ. des

tween the valves will swell; and perhaps, this is one of the causes whence arise hydates, of which hereafter.

## S E C T. MCCXVI.

**W**HICH therefore may take place wherever there are vessels containing this serum; that is to say, all over the habit of the body, and in every particular part thereof.

*Hippocrates* has told us, that the whole body is perspirable through all the external and internal surface of it; and, *vice versâ*, that there are *carnes attractrices ex cavo & intrinsecus*, “attracting flesh or fibres which draw the humours out of, and into, the cavities:” which passage was mentioned in the commentary on §. 323. and §. 333. when we treated of the contusion. *Abraham Kaau*<sup>b</sup> has, by very ingenious experiments, demonstrated, that this perspiration, and on the other the inspiration or resorption of the perspired fluid by the veins, obtains all over the body, both in the external and internal parts. This perspirable matter is evident to sight in very intense cold, in the form of a steam, exhaling everywhere from the skin, the lungs, and the inside of the mouth. If the breast, or abdomen, be cut open in living animals, a like steam exhales, striking the smell with a peculiar scent; but this exhaling moisture in healthy persons is re-absorbed, before it condenses into a sensible fluid; but after death, especially after the body is grown cold, the condensed vapour is found in the form of water, in the cavities of the body; and the same thing happens in weak health, or rather in a morbid state of the body. This made *Hippocrates*<sup>i</sup> say, *Omne enim concretum sive cute sit*

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carn

<sup>b</sup> Perspirat. dict. Hippocrat. per universum corpus. *Arte, Cap. viii. Charter. Tom. II. pag. 150.*

<sup>i</sup> L



*ne tegatur cavum: impletur autem sanum quidem spiritu, ægrotum vero ichore;*” “every concrete part; whether it be covered with skin or with flesh, is hollow; and when sound is filled with air, when diseased with ichor.” As this law therefore prevails through the whole body, and each particular part, it is sufficiently evident, that if, from any cause whatsoever, this resorption of the perspirable exhalation be obstructed, it will be collected and condensed into water, and thus will fill and distend the cavity in which it lodges. From whence is evident the truth of the assertion, that a dropsy may be formed in the whole habit of the body, and in each single part. *Aretæus*<sup>k</sup> has well remarked this, saying, *“eterum nonnunquam & exigua in parte homo hydropem contrahitur, ut secundum caput in eo morbo qui hydrocephalus nuncupatur, aut in pulmone solo, aut hepate, aut milie, aut in mulierum utero, & cæteris hæc species salubrior; nam si ejus ostiolum a priori conclusione hiare ceperit, humorem quidem si habeat effundit, si spiritum non effundit;”* but sometimes a man labours under a dropsy of some small part, as of the head, in that disease which is called hydrocephalus; or in the lungs only, or liver, spleen, or uterus; and this last kind is more easy to be cured than the rest; for when the mouth of the uterus begins to open after it has been shut up, if it contain water it will pour it out, if wind it will exhale it.”

This therefore is the general idea of a dropsy; and it is easily seen that different functions will be injured, according as the watery serum is collected in one or other cavity of the body, and impedes the action of various viscera. At the same time it is to be noted, that the collected lymph cannot always be evacuated with equal ease or safety from the cavities in which it lodges. This is the reason why, in this disease, we are carefully to consider what parts of the body it occupies, that we may establish any thing determi-

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<sup>k</sup> De caus. & sign. morb. diut. Lib. II. Cap. 1. pag. 51.

nate with regard to the cure of it. We shall therefore first treat of the dropfy of the head, and afterwards of other dropfies.

## S E C T. MCCXVII.

**H**ENCE the disease is called hydrocephalus, when the watery serum lodges between the external integuments themselves between them and the skull, between the skull and the membranes of the brain; between the membranes themselves, or their duplicatures between these membranes and the brain; between the folds of the brain, or in the cavities thereof, without however causing sudden death.

An hydrocephalus properly denotes a dropfy of the head; however, a collection and effusion of watery serum in the head has not always this appellation. For unless the parts of the head affected by it are flexible as to suffer themselves easily to be distended, and thus to make the head appear more bulky, the disease is not called an hydrocephalus. When in lethargies, or what is called the cold apoplexy, watery serum is collected in the ventricles of the brain, no one will call this disease an hydrocephalus, because the firmness of the bones hinders the distension of the head; and hence the bulk of the head does not seem increased, although a considerable quantity of watery serum accumulated and lodged within it.

But although water may be lodged in every age of life, between the skull itself and the common integuments, yet this more rarely happens to adults and therefore, an hydrocephalus is generally a disease of young people: it is, that sometimes the foetus while in the mother's womb, labours under this disorder; and that the size of the head is so increased thereby, that the birth is not only rendered difficult



ut sometimes altogether impossible; unless the membranes which contain the water, are burst by the efforts of the labour, or an issue for the water be procured by art, and thus the size of the head be diminished.

This disease frequently arises in the infant soon after the birth, and great attention should be used to discover it in the beginning; for it is hard to be cured when got to a head. We know that in new born children, the skull is not intirely ossified, but that considerable membranous interstices are found between the bones of the head, which ossify when the child grows older, sooner or later in different subjects. I have sometimes seen in children eight years old, between the sinciput and the forehead, the opening commonly called the fontanella, still remaining; and sometimes later, the membranous part not being yet ossified: whence, it is easily seen, that when a fluid is collected in the cavity of the skull, the bones are continually reteding more and more distant from each other, and the membranous part is distended; and thus the size of the head may be surprisngly increased, as numerous observations shew.

This disease is conveniently divided into an external and internal hydrocephalus; it is called external, when the water lodges between the integuments of the head themselves, or between these and the skull; internal, when the lymph is collected in the cavity of the skull, in whatever part thereof it may be lodged: for it may, as will be seen presently, occupy various regions. *Celsus*<sup>1</sup> seems to have known only the external species of this disease, when he treats of diseases which arise in the head; for he says, *præter hæc etiam invenitur genies, quod potest longum esse: ubi humor autem inflat, eaque intumescit & prementi digito cedit* ὑδροκεφαλον *Græci apellant*; “when the water distends the skin, and the swelling yields to the pressure of the finger, the *Greeks* calls this disease an hydrocephalus.” And this seems to be confirmed,

<sup>1</sup> Lib. IV. Cap. II. pag. 187.

firmed, by the method which he recommends for the cure<sup>m</sup>. *In hoc tonderi ad cutem necesse est, dein imponere sanapi ut exulceret si id purum profuit, scalpello utendum est.* “ In this disease the person should be close shaved, and a sinapism should be applied, till a sore be produced; if this prove unsuccessful, the knife must be used.” For his intention seems to have been, that by these means a passage might be made for the water, collected between the integuments and the skull, to be evacuated: on the other hand, some physicians of note, have doubted whether there were such a disease as an external hydrocephalus, or at least, if it had ever been observed, it did very not seldom happen. *Petit*<sup>n</sup> owns, that he has observed no other hydrocephali than those produced by watery serum, collected in the ventricles of the brain. The cases certainly, in which a hydrocephalus exists, from water lodged between the external integuments alone, without any extravasated lymph being found in the cavity of the skull, are very rare: however, as water may be lodged in the cellular membrane all over the body, the same may also happen in the head: but the artificial hydrocephalus, mentioned by *Hildanus*<sup>o</sup>, was rather an empyema. The wicked parents of the infant (of whom this story is related) having cut a small hole in the skin of the top of the child's head, by blowing in air, had swelled the integuments to a prodigious size, in order to get money; they were deservedly punished with death.

That a hydrocephalus, whose seat is the external part of the head alone, is rarely seen, is confirmed also from hence; that *Aetius*<sup>p</sup> treating of this disease, describes it indeed as twofold, internal and external; but at the same time observes, that for the most part, there is a collection of water in these cases, but sometimes

<sup>m</sup> Ibidem, pag. 189.

Mem. pag. 121.

pag. 199.

<sup>n</sup> Academ. des Sciences, 1718.

<sup>o</sup> Observ. Chirurg. Cent. 3. Observ. 18.

<sup>p</sup> Lib. VI. Cap. 1. pag. 99. verba.



metimes also of a foul bloody fluid; and among the apparent causes of the disease, he enumerates a blow, or a bruise, by which the vessels are broke, and the blood effused; and takes notice particularly, that these accidents happen when the midwife handles the infant's head too roughly: hence it plainly appears, that under the name of an hydrocephalus, he has described swellings arising from a contusion on the outside of the head. *Stalpart Van der Wiel*<sup>a</sup>, who relates many instances of an hydrocephalus, says, *quod tales hydrocephali non tantum a violentiâ, aliâve causâ externâ nascantur, sed & quod in iisdem limosa uædam vel & sanguinolenta turbulentaque sæpe reperiuntur lymphæ cum tamen in internis hydrocephalis ea clara semper & limpida appareat*; “that such kinds of hydrocephali (that is to say, such as are external) not only are caused by violence, or some external cause, but that in these swellings, the lymph is always found, as it were, muddy, or even bloody and turbid; whereas in internal hydrocephali, the lymph is always clear and limpid.” It often happens in a difficult labour, that if the head of the fœtus remains any time squeezed between the bones of the pelvis, that then that part of the head which is just opposite to the open orifice of the womb (after the waters are come out) will begin to swell, and we shall find an ecchymosis in this place after the child is born; but it seems not reasonable to call such a swelling an hydrocephalus. This also often happens, when the mouth of the womb, together with the head of the fœtus, does not directly answer to the bottom of the pelvis, but lies in a direction towards the side of the pelvis, or the top of the os pubis; for then the infant's head, by the violent efforts of the woman in labour, is bruised against the bones. I remember to have seen a considerable swelling of this sort in a child, whose left frontal bone had been prest for a long time against the edge of the os pubis; till

<sup>a</sup> Observat. rar. Tom. II. pag. 123.

till a more skilful midwife being called, by changing the posture of the woman in labour, and prudently handling the child, corrected this perverse situation but the swelling itself was happily cured, by those remedies which have been heretofore recommended for contusions; and I have seen him since in riper age stout and healthy. I have seen several like cases but have never observed what *Aetius*<sup>r</sup> seems to hint for he says, that when such a tumour has been caused by a blow or a bruise, that at the first it is red and painful, but afterwards, the contained humour being changed into a thin substance, at length the swelling is unattended with pain, and of the same colour with the skin: certainly, if the blood extravasated and collected in this tumour under the skin is capable of being gradually so attenuated as to be turned into a thin lymph, it may easily be re-absorbed and such a tumour be cured by discussion, or resolution, as was shewn at large in the section of contusions. In those cases which I have seen, such tumours were intirely dissipated, without any necessity of cutting the skin, to make way for the extravasated blood.

It is moreover to be noted, that there is found sometimes in new born infants, a soft swelling, of no inconsiderable size, near the occiput. I have seen some of this kind, and all the children who had it, died, and some of them in a short time. *Ruyfch*<sup>s</sup> says, he has sometimes seen these tumours, and once he saw one so prodigious, that it was bigger than the new born infant itself: he observes, that these tumours are not properly to be called dropsies of the head, if the rest of the head is sound: however, he remarks, that they have this affinity with dropical swellings of the head; that the infants soon die if this kind of tumours be opened; as the fluid contained in these sort of tumours, for the most part, has a communi-

cation

<sup>r</sup> Loco citato.  
pag. 50.

<sup>s</sup> Observat. Anatom. Chirurg. N° 52.



ation with the watery fluid, which is lodged in the ventricles of the brain: he asserts, that he has sometimes seen such tumours, which were not altogether filled with liquids, but were partly fleshy, and partly also cartilaginous. *Wepfer*<sup>\*</sup> however, saw a girl who had such a swelling in the occiput, who lived to be upwards of six years old, although she had had dysentery, and a catarrhal fever: convulsions, and palsy of the left foot, preceded her death: and on opening the body, it appeared, that this swelling had a communication, by a hole exactly round in the lambdoidal bone, with the internal parts of the head, and the ventricles of the brain contained above a pint of bloody water.

But, inasmuch as all the contents of the skull are always found moist in them who die a violent death, no one will wonder that watery serum may be collected there, and that in various parts thereof; but most frequently in the ventricles of the brain, as may be gathered from many observations to be found in authors. Certainly the dura mater, it is well known, adheres firmly to the cranium, so that it cannot be torn from thence without a considerable force being used, so that it will be more difficult for serum to be accumulated between the cranium and this membrane; this may much sooner happen, between the dura and the pia mater; as although these membranes are indeed contiguous to each other, they do not naturally stick together, but a moisture is constantly interposed. The membrane called arachnoides, which lies close to the pia mater, has a cellular substance: whence in a dead body, if it be skillfully pierced with the point of a lancet, it is easily inflated and distended with air; lymph may therefore be collected between this membrane and the pia mater, as I have sometimes seen to be the case in the bodies of those who died of a lethargy; there is then an appearance, as though a jelly was poured  
over

<sup>\*</sup> Observat. Med. Pract. de Cap. Affect. N<sup>o</sup> 23. pag. 46.

over the brain, as the collected lymph is distributed through innumerable little cells; although, when puncture is made, thin lymph flows out. Many observations may be read in *Stalpart Van der Wiel* concerning water collected in various internal parts of the head: but one which most remarkably evinces the truth of this, is the accurate examination of a foetus, of which a poor woman<sup>w</sup> was with great difficulty delivered, on account of the prodigious size of the head; on opening the body, the integuments of the skull being cut asunder, only a small quantity of lymph was found in the cellular membrane; but the pericranium, which was swelled up in the form of a bag, and divided from the bones of the skull, contained a reddish lymph in large quantity: the dura mater was every where loose from the upper bones of the skull, but it adhered to the pericranium; at the place of the sutures, some pints of lymph were lodged between the pia and dura mater; the pia mater itself was nearly in its natural state; the brain depressed by the weight of the incumbent lymph had altogether lost its convex form, insomuch that the lobes thereof were so flattened, as to be on a level with the corpus callosum; the rest of the brain, the medulla oblongata, and one lobe of the cerebellum, were squeezed to a pap. In this instance, lymph appeared to have been collected both in the external and internal parts of the head.

Numerous observations shew, that the lymph contained in the ventricles of the brain is the cause of a hydrocephalus; and it was noted before, that *Petion* had observed no other species of hydrocephalus. What seems most wonderful is, that so great a quantity of lymph can be contained in the cavity of the skull. *Vesalues*<sup>x</sup> saw at *Augsburg*, a girl of two years old, whose head, in seven months time, had increased

<sup>u</sup> Observ. Parior. Tom. II. pag. 112, & seq.  
 Henr. Velse, Dissertat. Miscell. Anat. pract. pag. 39.  
 Corp. human. fabrica, Lib. I. Cap. v. pag. 17.

<sup>w</sup> Corn.  
<sup>x</sup> De



reased to a wonderful size; and after death, near  
 nine pints of water was found in the ventricles of the  
 brain: at the same time he observes, *quod calvaria*  
*erat prorsus membranacea, tantaque duntaxat sede ossæ,*  
*quanta calvariæ puellæ erat amplitudo, priusquam caput*  
*extra modum increveret;* “ the skull was intirely  
 membranous, with only so much of a boney sub-  
 stance remaining, as was equal to the space of the  
 girl’s skull, before the head grew to an immode-  
 rate size:” no collection of water was observed in  
 any other part of the body, the cerebellum, and the  
 whole basis of the cerebrum, as also the origin of the  
 nerves were in a natural state, and the girl preserved  
 the use of all her senses to her death. *Vesalius*, who  
 saw the girl a few days before her death, observed,  
 that if her head was moved by the people about her,  
 it was held up ever so little, that then immediately  
 a cough and difficulty of breathing followed; her  
 face was flushed with blood, and tears dropt from  
 her eyes. *Tulpius* <sup>y</sup> saw an hydrocephalus in a boy of  
 five years old, in which the swelling contained five  
 pints of water; which being evacuated, the whole  
 cavity of the skull appeared so empty, that most  
 who saw it, thought the brain was wanting: it ap-  
 peared however, that the brain was there, but that,  
*missa figura globosa induisse formam convexi fornicis &*  
*exuberante aquâ, sequacem ejus medullam adeo fuisse*  
*distentam ut instar alicujus crassioris membranæ adhæ-*  
*resceret undique arcuatæ dissolutorum ossium circumferen-*  
*tiæ;* “ having lost its round figure, it had assumed  
 the form of an arched vault; and that its soft  
 yielding medulla was so distended by the vast  
 quantity of water, that it adhered on all sides like  
 a thick membrane, to the arched surface of the  
 disjointed bones:” however, the father of the boy  
 solemnly averred, that the mental faculties had been  
 unimpaired. And we read <sup>z</sup>, that above twenty-four  
 pints

<sup>y</sup> Observat. Medic. Lib. I. Cap. xxiv.  
 ec. 3, anno. 1. pag. 25.

<sup>z</sup> Miscell. curios.

pints of water were taken out of an infant's head, before several witnesses.

It may justly surprize us, that any one could survive, and that for so long a time, when the head was filled with such an enormous quantity of water as often a few ounces of blood extravasated under the skull have been the cause of sudden death. But in very young persons, the bones of the skull are capable of giving way, being joined only by membranous interstices; nor is so great a quantity of lymph effused all at once, but is collected gradually and successively. It is still more wonderful, that in some persons, the senses remained unimpaired, although the form of the brain was so prodigiously altered (as well by the pressure of the incumbent water, as by the great extension of the ventricles) as that it seemed to be wanting, not only to the vulgar, but even to physicians: and although the facility of extending the bones of the head, in very young persons, will go a great way in accounting for this, yet the difficulty is not wholly solved by it. For the size of the head has been observed to be increased, although the bones had acquired their usual hardness, in proportion to the patient's age; and yet it manifestly appeared, that the functions of the senses were uninjured; but the bones of the head were so thin, as in a strong light, the contents of the head might be seen through them<sup>a</sup>: but we have another instance of an hydrocephalus, in a boy of eight or nine years old, in which the bones of the forehead, of the top of the head, and of the occiput, were more than a sixth of an inch thick, and yet three pints of water, without any smell, were taken out: when the skull was cut open, and the skilful anatomist<sup>b</sup> found no traces of the brain, but only the medulla oblongata, he owns he could not tell whether the boy had the use of his senses, or of speech; he was able, however,

to

<sup>a</sup> Betheder Histoire de l'Hydrocephale de Begle, pag. 35, & seq. <sup>b</sup> Du Verney Traité des Maladies des os, Tom. II. pag. 8.



to live so many years. *Hildanus*<sup>c</sup> saw a youth of eighteen, whose head was of an immense size; it had begun to swell when he was about three years old, after he had undergone an acute disease; the rest of his body was extenuated; *cranium autem non membranofum ut plerumque solet esse hydrocephalorum, sed durum solidumque, tactu percipiebatur*; “the skull was not membranous, as it generally is in the hydrocephalus, but felt hard and solid to the touch:” he spoke distinctly, but had not his perfect understanding, and was subject to terrible epileptic fits. A man used to shew himself at fairs, who, from the beginning of life, had laboured under an hydrocephalus; and he was indeed very languid, but however, was above thirty years old: his head was of a prodigious size, though the rest of his body was not bigger than that of a boy of ten years old; he had his senses, but was of dull intellects, nor could he move about much; and indeed, the great weight of his head hindered him from sitting upright any long time, unless he was supported by pillows put behind.

When late posterity shall find in burial-places such prodigious skulls, there will not, undoubtedly, be wanting some, who, from calculating the proportion of this to the other parts of the body, will conclude, such a skull belonged to a giant of an immense stature, especially if at the same time the bones of such a skull shall be found thicker than common; as was the case in the skull which *Du Verney* saw, of a boy of nine years old. If a whole skull of this kind were to be dug up, the truth might be known, as the bones of the upper jaw would retain the natural size, although the bones of the cranium were immeasurably increased in size. But if the bones of the skull are found already disjoined, this criterion cannot take place. *Ruyfch*<sup>d</sup> preserved the

VOL. XII.

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<sup>c</sup> Observ. Chirurg. Cent. 3. Observ. 19. pag. 199.  
<sup>d</sup> Catalog. Rarior. pag. 153.

left sincipital bone of a giant, of so vast a size, that it might have served for a helmet for the whole head of a common man. *Ruysch* knew it to be a human bone, and he could not well be deceived on affairs of this nature; but the sexton of the new church in the city, says *Ruysch*, *dixit nobis, sese illud inter alia offeffodisse, cujus curiositas tanta non erat ut cætera quoque reservaret*; “ he told me, that he dug this up among other bones, which were not extraordinary enough to induce him to keep any of them.” Certainly if this sexton had found any other bones of this supposed giant’s skeleton, he would have offered them to *Ruysch*, or to the worshipful burgher-master of *Amsterdam*, *D. J. Witsen*, who kept the sincipital bone in his museum. Add to this, that the history of the country makes no mention of any giant of so huge a stature having ever existed; who, however, must have drawn all men’s eyes upon him while he lived.

## S E C T. MCCXVIII.

**I**T is easy to know, that the latter kind is incurable; the others may be cured by light burning, trepanning, or puncture, cautiously and gently applied; and by the use of internal hydragogues, and strengtheners; or they may be dissipated by external discutients.

It is required to the cure of every dropsy, as will be said hereafter, §. 1231. that the waters, effused into the different cavities of the body, be dislodged from thence: but when a large quantity of water serum lodges in the cavities of the brain itself, it is easy to see that it cannot be drawn off from thence by puncture at least cannot be used, as before it could have effect, we must bore through the whole substance of the brain, and the corpus callosum in  
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self. And the re-absorption of the extravasated serum from the cavities themselves of the brain, can scarcely be hoped, unless there be a very small quantity indeed lodged there; and then it will very difficultly be effected, as the serum was accumulated there; for this very reason, because the veins did not sufficiently re-absorb the moisture perpetually oozing from the mouths of the arteries. If there be therefore any hopes, they must be founded on the cure being attempted in the very beginning of the disease; therefore all those symptoms, which afford any suspicion of this disease beginning, are attentively to be watched.

*Petit*<sup>d</sup> has remarked, that this disease takes rise sometimes after difficult breeding of the teeth, or violent convulsions; as also, when children have been troubled with worms: in the beginning of the disease, the lips and eye-lids are agitated with slight convulsive motions; the patients bite their lips, gnash their teeth, and rub their nose: the belly is either too much bound, or too lax; the eyes appear languid; the pupil is dilated more than common; the patients grow pale, weak, melancholy, and languid. The principal sign of this disease beginning, is the becoming stupid and sleepy; which shews, that the brain is already oppressed by the watery serum collected in the head; then, as the disorder increases, the bones of the head begin mutually to recede from each other, the size of the head increases, and then there is no longer any doubt of the existence of the disease. All the preceding symptoms denote, that the functions of the brain are gradually more and more impaired, which alteration is less perceptible in infants of only a few months old; but when they have past one year, this change is more obvious to remark. Thus we read of a boy<sup>e</sup>, who enjoyed perfect health, till, when he began to be attacked by this disease, his speech grew less distinct, he learnt no-

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<sup>d</sup> Académ. des Sciences L'An. 1718. Mem. pag. 123.  
<sup>e</sup> Ibidem, L'An. 1705. Histoire, pag. 70.

thing more, his memory perished, his senses grew duller and duller, and at last quite failed; no water was found either in the external parts of the head, although greatly increased in size, nor between the meninges; but on piercing the brain, a great quantity of transparent lymph issued forth, which had no bad smell at all. Besides the signs already mentioned, and particularly the perpetual stupidity, we have sometimes remarked, that persons afflicted with this disorder, cannot bear an erect posture of the head without crying out; but as soon as they lean back their head, supported by a pillow, they are quiet but stupid. I have ventured to foretel an accumulation of watery serum in ventricles of the brain, although the size of the head was not remarkably increased; and on opening the body, it appeared I had conjectured rightly: I have always found the fluid collected in these cases to be limpid, and without any foetid smell.

*Hippocrates* has described the signs which shew themselves, *si aqua in cerebro orto fuerit*, “if water gathers in the brain:” But he does not mention as one, the increased size of the head; and the other circumstances which he describes in this disease, plainly enough declare, that he is not here treating of an hydrocephalus in young children, the bones of whose skull may be made to recede from each other, but of a collection of water formed in the brain of a grown person. These signs he thus enumerates: *Dolor acutus sinciput & tempora (interdumque alia capitæ parte detinet). Subindeque rigor & febris; oculorum regiones dolor occiput, iique caligant, pupilla scintillatur, & ex uno duo sibi cernere videntur, & si surrexerit ipsum tenebricosa vertigoprehendit.* “An acute pain infests the sinciput and temples, and sometimes seizes the patients in other parts of the head; and they have at times shiverings, and a fever; pain is felt about the region of the eyes, and the

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grow dim; the pupil seems to divide, and the patients see double; and if he rises up, he is seized with a giddiness and dimness of sight, &c." If these symptoms are compared with those which *Petit*<sup>g</sup> observed in the bodies of persons dying of this disorder, the reason of these symptoms is sufficiently evident. He found the dura mater adhering more firmly than usual to the skull, the basis of the cranium flattened, and as it were depressed, the orbits of the eyes, and the eyes themselves, thrust outwards. In very young children we can scarce learn, by enquiry, what incommodious symptoms they feel; more especially as in the progress of the disease, they grow more and more stupid, and their speech grows weaker and more indistinct: however, by a grievous crying night and day, they shew that they feel pain; as *Lifstre*<sup>h</sup> observed in a boy, who was ill two years of this complaint, and slept very little during the whole time, but was perpetually crying.

When from the symptoms just enumerated, I suspected that water was collected and lodged in the internal parts of the head, then ordering the hair to be taken off, I used a gentle friction, which they easily bore: I had the head covered with a soft aromatic plaister, such as the emplastrum e labdano, or the meliloto of the shops; this was removed twice or thrice a day, that the head might be rubbed: I caused the part behind the ears to be rubbed harder than the rest, so as to make the skin look red; for as there is frequently observed behind the ears, and indeed through the whole skin of the head, that there oozes out a considerable quantity of moisture; which flux, if it be stopped or checked imprudently, the brain is soon affected, and all its functions disturbed: hence I had hope, that the internal parts of the head might be relieved, if the external skin of the head was made very moist.

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<sup>g</sup> Academ. des Sciences, L'An. 1718. Mem. pag. 123. <sup>i</sup> Academ. des Sciences, L'An. 1705. Histoire, pag. 76.

I tried this method upon a girl of nine months old and was much rejoiced to find a considerable moisture near the right side of the fontanella; and afterwards the skin of the whole head, and particularly behind the ears, was constantly bedewed with much moisture, that the child's caps were forced to be frequently changed, on account of their being wet through. Carefully examining the head every day, I found it did not increase in size, and that the bones on the top of the head did not recede farther from each other. I used at the same time, such gentle physic as the infant's tender body would bear; but my expectation failed me; and after the skin of the head had oozed out moisture for a fortnight perpetually, the heaviness increased, and after some slight convulsions, the child died. I found in the ventricles of the brain above six ounces of clear water. If nine parts of the emplastrum de meliloto be used to one part of the emplastrum vesicatorium, and the being spread on a rag, be put on the head, (the hair being first cut off with scissars or with a razor, but not close shaved) the skin is lightly irritated and begins to look a little red; but the epidermis does rise in blisters, as a small quantity only of the emplastrum vesicatorium is used; and on account of the remainder of the hairs, the head not being shaved but the hair only cut, the plaister does not come into immediate contact with the skin, and the skin generally begins to grow moist.

I have used this method with success, when running sores of the skin of the head have been imprudently stopped by drying remedies. This perverse management has brought on convulsions, or dreadful inflammations of the eyes, or a dangerous asthma; for the excretion of the ichor through the skin soon returns, to the relieving the patient from all these bad symptoms: whence it appears, that some good may be hoped from the use of this method, especially in the beginning of the disorder.



Bags filled with aromatic cephalic herbs, such as sage, rosemary, lavender, &c. are sometimes applied to the head, to which it is usual to add a quantity of decrepitated sea-salt, which soon draws moisture to itself, even from the very air; at the same time gently and cautiously compressing the whole head, supports the parts, and enables them to resist too great a distension. They are used to make a cap of *Turkey* leather, which they draw to gently by buckles, so as rather to support the parts, than strongly to constrict them.

Purgatives are given frequently, to the end that the body being exhausted of fluids, the veins may be more emptied, and by this means more readily absorb the extravasated lymph.

When the collected water is lodged between the integuments and the skull, a way may easily be made for it to be evacuated, by scarrification, or by burning, which leaves an ulcer long kept open, by which the watery serum may perpetually flow out: but, when it is lodged in the cavity of the skull itself, the difficulty is much greater. It has been said already, that if it lodges in the cavities of the brain, it cannot be drawn from thence by puncture; but if the water be collected between the meninges, it would indeed be easy to pierce there: but when the serum was drawn out, the soft bones, united only by a membranous substance, would collapse and compress the brain, when the head was laid on a pillow.

It is indeed true, as will hereafter be observed, when we speak of the general treatment of a dropsy, that the curative indication requires the evacuating the water from the cavities of the body. But however, almost all observations shew, that puncture is fatal in an internal hydrocephalus. *Petit*<sup>1</sup> expresses his sorrow, that all patients who underwent this operation died; for if a large quantity of water is drawn off, they expire in four or five hours after the dis-

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<sup>1</sup> Académ. des Sciences, L'An. 1718. Mem. pag. 122.

charge: if less be drawn off, they died slower; but none survived the operation above forty hours. A famous surgeon<sup>k</sup> absolutely condemned the puncture in an hydrocephalus, as always fatal; and when another bolder surgeon performed the operation on a boy of three months old, after the water was let out the bones subsided, and death ensued the next day although the water let out was perfectly clear, and lodged between the skull and the dura mater; which species of hydrocephalus might seem to afford more hopes of a cure, than the others, where the water is lodged deeper in the head. *Hildanus*<sup>l</sup> is of the same opinion: and we read in *Wepfer*<sup>m</sup>, that he refused to perform this operation on a boy of five years old although the mother was very urgent for it; and he was afterwards informed, that some surgeon had performed it, and that the patient died of it. Although at this age a greater firmness of the bones might be expected, so as that they would be less liable to subside after the water was let out. As therefore I have never seen any escape, on whom this operation has been tried; and as the most approved authors reject it, prudence seems to direct, that patients afflicted with an internal hydrocephalus should be left to take their fate, especially as certain experience shews, that many live a long time with this disorder, although miserably.

It is indeed true, that *Aetius*<sup>n</sup> has recommended incision, both in the external and internal hydrocephalus; but at the same time he says, that the ancients had observed, that water was sometimes collected between the membranes and the brain, which disease is mortal. *Hippocrates*<sup>o</sup>, after he had tried to draw off the water contained in the brain, principally

<sup>k</sup> La Motte Traité complet. de Chirurgie, Tom. II. pag. 131 &c. <sup>l</sup> Observat. Chirurg. Cent. III. Observ. XLVII. pag. 198

<sup>m</sup> Observ. Med. Pract. de Cap. affect. Observat. XLIX. pag. 49

<sup>n</sup> Lib. VI. Cap. 1. pag. 99. versa. <sup>o</sup> De Morbis, Lib. II

Cap. VI. Charter Tom. VII. pag. 556.



ally by repeated purges, advises, as a last remedy, that an incision being made in the head, the perforation should be continued even to the brain: but as was remarked a little while ago, he does not seem in this place to speak of an hydrocephalus as a disease of infants, in whom the bones are soft, and will easily subside, but of water collected in the cavity of the skull of adults. At the same time it is very evident, that the piercing of the skull can only give issue to water lodged between the skull and the meninges, or between the meninges and the brain; but that the watery serum contained in the ventricles of the brain itself, can never be let out this way.

Nay, although the lymph contained in the ventricles could be drawn out from thence, without injuring the brain by the wound, yet it should seem, that all the parts would collapse so much on the evacuation of the lymph, that the functions of the brain would soon be destroyed. And this seems to be confirmed, from that disease which is sometimes observed in new-born children, and which the surgeons and physicians call a double spine; because the articulations of the vertebra gape as it were, and a soft tumour, various in its size, grows there; sometimes containing limpid water, sometimes a darker coloured fluid, and the integuments sometimes keep their natural colour, but more frequently are of a reddish or livid hue. Professor *Ruyseh*<sup>p</sup> describes this disease, and says, *si rite hunc examinaverimus tumorem, luce meridianâ clarius constabit, hydro-pem esse particulæ spinalis medullæ eundemque esse fere affectum qui in capite fœtus hydrocephalus audit*; “ if we examine this swelling judiciously, it will appear as clear as day, that it is a dropsy of a part of the spinal marrow, and is almost the same disorder, which, when it is seated in the head of an infant, is called an hydrocephalus.”

This

<sup>p</sup> Observat. Anatom. Chirurg. Centur. Observ. xxxiv, xxxv, xxxvi. pag. 33, & seq.

This kind of tumour appears in the back or loins, and sometimes, but seldomer, in the nape of the neck; and most seldom of all in the lower and exterior part of the os sacrum; which surpris'd *Ruysch*, as the lower part of the os sacrum has a gaping backwards, even in a natural state. But although the vertebræ for the most part gape only on the back part near the spinal processes, the main body of the vertebræ remaining entire; yet he observed in a dead body a single opening in the vertebræ, which was scarce big enough to contain a vetch: but he owns, that none of the infants, whom he attended in this disease, escaped; and he saw that death was always hastened, if this swelling broke of itself, or was imprudently opened. For this reason, before *Ruysch*'s observations, we find *Tulpius*<sup>a</sup> cautioning surgeons not to open such swellings.

The whole cure therefore is only palliative, and consists in taking care, that the integuments which contain the tumour be not burst, either by incautiously touching them, or by attrition; but rather, that by astringent and strengthening fomentations, the integuments be rendered firmer, that the tumour may remain longer whole and enclosed.

We read<sup>r</sup> of an infant kept alive to his fifth year by this means, and perhaps the child lived beyond that time; for the author speaks of him as living at the time he wrote, and as then past five years old: but for the most part children die sooner, as either by accident, or imprudent meddling on purpose; or by a mortification coming on, an issue is procured to the lymph, which causes the tumour. If persons afflicted with an hydrocephalus can live so long, there may be hopes of prolonging life in the disorder of the double spine.

<sup>a</sup> Lib. III. Observat. Med. Cap. xxix, xxx. pag. 232, & seq.

<sup>r</sup> Abram Fitfing, Over de Tegennatuurlyke Splyting de Ruggergraat, pag. 69.



Perhaps also the lymph contained in the swelling of the spina bifida, or double spine, descends from the ventricles of the brain; for we know, that the fourth ventricle of the brain is continued along the spinal marrow. There is an observation in *Wepfer*<sup>s</sup>, which seems to confirm this opinion. A girl was born, whose head was well formed; on the back, to the right side of the upper vertebræ of the loins, appeared a livid bright spot, about five inches long and three broad, which daily rose higher and higher, but so that it rose above the thickness of the little finger, and at the same time it grew so bright as to shine like a mirror; her right foot was immovable from her birth. On the tenth day after she was born, as the water was visible through the skin, the surgeon made a wound, from whence issued an absolutely limpid water; the wound closed soon; which the mother, in the following days, opened six times with her nails, three ounces of water issuing forth at each time: the surgeon soon healed up the place; but as soon as the place was scarred over, and the spot had quite vanished, first the right frontal bone, and then the left, began to rise to a height, and an hydrocephalus, with a vast increase of the size of the head, shewed itself, when the child was between three and four weeks old. It is evident, had there been a defluxion of the lymph from the ventricles of the brain, the issue for which being hindered, and the integuments being no longer distended with it, the head began to be filled by its accumulation, and to be distended every way. At the same time it appears, that as, even in a place so distant from the head, a discharge of the extravasated lymph could not be produced with safety: but that in all such cases, the most respectable authors testify, that death always ensues, for the most part in a few days. A fatal event is much more to be expected, if puncture be attempted,

<sup>s</sup> Observat. Med. Pract. de Affect. Caput. Observ. xxix. pag. 56.

attempted, when the internal parts of the skull are filled with watery serum accumulated there.

## S E C T. MCCXIX.

**I**N a dropfy of the chest, where water may be collected from various parts, the symptoms are almost the same as those of an empyema: but observation of the antecedent, enables us to distinguish the disorders. Tapping cures this kind of dropfy; those remedies being also administered, which are opposite to its cause.

It was said, in the commentary on §. 1217. that a perspiration of fluids, and a resorption of the perspired fluids took place in all the cavities of the body, both great and small. This will therefore be applicable to the cavity of the breast; nay, this perspiration of the humours may seem to be very considerable in the chest, as the humours are propelled by the whole force of the heart, through the neighbouring vessels. Certainly the surface of the lungs, which is in contact with the air, breathes forth at every expiration of air a vast quantity of moist vapour, which vapour is not visible in warm summer weather, but is dissipated in an invisible exhalation in the air; but in a severe winter, it is expelled from the mouth and nostrils of men, and of large animals, in the form of a thick cloud, and indeed in much greater quantity, and with greater force, than from the rest of the surface of the skin; as is very plain, if any one rising from a warm bed (in an intense frost) exposes himself to the cold air for an instant, his hands smoke indeed; but a much more copious steam issues from the nostrils and from the mouth. This phænomenon frightens black servants (who have always lived in a very hot air) when they come to the colder



colder climates of *Europe*. But *Kaau*<sup>t</sup> has demonstrated, by direct experiments, that the external surface of the lungs, the whole pleura, the mediastinum, the pericardium, the heart, and the auricles, perpetually steam forth a like vapour. The swiftest circulation of the blood is through the coronary arteries; hence all the surface of the heart perpetually emits a great quantity of this kind of vapour; so that if, by a quick incision, the heart be laid open to the view, it reaks all over: wherefore, even after death, when the body is quite cold, a greater quantity of moisture is found in the cavity of the pericardium, in proportion to its size, than in the other cavities of the body, by means of this steam being condensed there.

In healthy animals however, all the internal parts, both containing and contained, are constantly found moist; but no fluid is found collected in them, if the animals are dissected alive, or presently after death: that moist steam, therefore, which exhales from the arteries is re-absorbed by the veins, as has been shewn by curious experiments<sup>u</sup>; but the smallest of these absorbed veins, being joined with those near them in the thorax, exhibit large trunks, visible even to the naked eye, in the thorax, and indeed on the surface of all the parts, both containing and contained; these lymphatic veins at last discharge themselves into the thoracic duct, or into the veins which convey the blood<sup>w</sup>. It is therefore evident, that there are passages by which the thin lymph, expelled from the last order of exhaling arteries into the cavities of the body, may be returned again to the mass of the circulating fluids; and thus an accumulation of any fluid, or a stagnation of it when accumulated, will be prevented.

But although in health, it should seem that the moisture exhaling from the arteries is re-absorbed in the form of a steam, and before it is condensed to lymph, yet it has been made appear, by direct experiments,

<sup>t</sup> Perspirat. dicta Hippocr. pag. 239, & seq. 274, & seq.

<sup>w</sup> Ibidem, pag. 279.

<sup>u</sup> Ibid. pag.

riments, that the vapours when condensated, and the water itself accumulated, thereby may be re-absorbed by the veins. *Musgrave* \* injected with a siphon, four ounces of warm water into the right side of the thorax of a live dog; whence followed a difficulty of breathing, and a manifest debility: however, by degrees these complaints diminished, and in a week's time the animal seemed as well as ever. Afterwards, in like manner, he injected sixteen ounces of warm water into the left cavity of the thorax of the same dog; the animal's breathing grew difficult, he grew very hot, and the heart beat very strong, and in a week's time the dog was well again. Afterwards he injected into one side of the thorax eighteen ounces, and into the other only six; all the same symptoms followed, but disappeared sooner, for the dog was well again in five days. At the same time he observed, that the creature made a greater quantity of water than usual.

We shall speak hereafter, §. 1228. of the causes of a dropsy; here it will be enough to note in general, that every cause which may obstruct the speedy re-absorption of the exhaling moisture by the veins, may be a cause of a dropsy of the chest: whence, we perceive, why after a spasmodic asthma of long continuance, a dropsy of the chest so often follows. Certainly, in this kind of asthma, the right ventricle of the heart is not able to propel the blood through the lungs, on account of the constriction occasioned by the spasm: hence, the vena cava cannot discharge itself, and therefore, all the veins are distended, the lips of these unhappy patients grow livid and swell; and on this account also, the lymphatic veins cannot transmit lymph which they have re-absorbed to the sanguiferous veins, which are distended from being over-filled with blood; the arteries in the mean time continue to exhale the moisture: hence, lymph is accumulated, or the tender lymphatic veins burst, and a perpetual distillation of lymph in-

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\* Philosophical Transactions abridged, Tom. III. pag. 78.



to the thorax enfues. These disorders are more especially to be feared, if the asthmatic paroxysms have been severe, and lasted long, and have returned frequently.

Perhaps, there is no cause more frequent of a collection of watery serum in the chest, than if a person, when his body is over-heated, suddenly drinks cold liquor, or stays long without motion in a cold air. How hurtful such imprudence is, was remarked before, in the history of the pleurisy, as far as relates to their occasioning inflammatory diseases: but in persons whose fluids are not disposed to an inflammatory viscosity, a dropsy of the breast is frequently the consequence of such irregularities; for such sudden cold causes a constriction of the mouths of the vessels, and more so of the venous absorbents than of the small exhaling arteries; because the veins have thinner coats than arteries of the same order, as also because the motion of the fluids through the arteries, towards their extremities, keeps them open or opens them, if they have suffered any degree of constriction: but the motion of the fluids in the veins does not act with any great force on their extreme orifices, so that if they are contracted by cold they shut more easily, or collapse, no fluid being between them; and if this happens in a great number of absorbent veins, an incurable dropsy is occasioned, as the absorption cannot then be restored. It is a known custom among the *Dutch*, that boats set out at stated hours from one city to another; as the boat is loosened from the shore at the ringing of a bell, people often walk very fast to come in time to the boat, which entering moist with sweat, and sitting still there for some hours, if the wind blows fresh or the weather be cold, it frequently happens that by these means they become asthmatic, and collect a quantity of watery serum in the cavities of the breast.

It is well observed in the text, that lymph may be collected in various parts of the thorax. On another occasion, §. 913. it was explained not only how the pleura lines the whole circuit of the inside of the chest, but also in what manner the mediastinum, dividing the thorax into two parts, is formed. Lymph therefore may be collected either in the right or in the left cavity of the thorax, or in both; it may all be collected in the cavity of the pericardium, round the heart. It was also there observed, that each cavity of the thorax had its own proper membrane so that we might conceive of the pleura as of two distinct membranes, or as two hollow bladders lying by the side of each other, and sticking together at the place where they touched, so as that from the duplicature of these membranes the mediastinum took rise, dividing the cavity of the thorax into two partitions. At the same time it was noted, that the pleura receding on each side from the vertebræ left a kind of triangular cavity, the back part of which was the column of the vertebræ of the back: this cavity is occupied by the cellular membrane, through which pass the aspera arteria, the œsophagus, &c. but forwards the lamellæ of the double pleura come here more closely, except that towards the upper part they leave a vacancy in which the thymus gland is situated.

The collected lymph therefore may be lodged in five distinct regions of the thorax; in the right or left cavity of the breast in the pericardium; behind exterior to the pleura near the body of the vertebræ and forwards, under the sternum between the two lamellæ of the pleura. It is worth while to distinguish these divers seats of the dropsy on these accounts principally, both because they produce different symptoms, and because a different method is necessary to draw forth the collected lymph from each of these regions; for if it be lodged either in the right or left cavity of the breast, it may be drawn



ff by paracentesis; if in the cavity of the pericardium, this membrane must be pierced; if the lymph is collected under the sternum, a perforation of the sternum will be requisite; if in that triangular cavity left behind between the membranes of the pleura receding from each other, and from the vertebræ of the chest, the water collected there, by its great weight will force its way along the cellular membrane, which inverts the muscles of the back, and fills up their interstices; and in the same manner if pus is formed there, it will form sinuous ulcers; as was also remarked §. 913.

Great care therefore should be taken to discover the diagnostic symptoms, which shew that a dropsy of the thorax is present; and at the same time enable us to distinguish, in what region the collected lymph is lodged. But a clear diagnosis of this disease is not always easy to be obtained, as will be evident from what will follow.

For a dropsy of the breast has many symptoms resembling, and even the same as those of an empyema; the fluid contained in the cavity of the breast will equally compress the lungs, and leave them too little space for their free motion, whether this fluid be pus, or whether it be watery serum: the pus, by length of time, degenerating into an acrid ichor, will irritate the parts which it touches, equally as the lymph when it begins to grow putrid. *Albertini*\*, by careful examination of this disease, and dissection of bodies, has found that the fluid stagnating in the thorax, if it be pure water, does not bring on so great a difficulty of breathing, unless it almost fills both cavities of the breast, or distend either of them much as to diminish the space of the other by compressing it: but when the extravasated fluid is turbid, of a deep yellow, or very acrid, that then even a small quantity of serum collected in the ca-

vity of the breast, will cause a very considerate difficulty of breathing.

The observation of the antecedent causes enable us to distinguish it: for instance, after an inflammatory disorder in the breast the signs of suppuration have followed, and to these succeeds a difficulty of breathing, we readily conclude that it exists: but above, in the chapter of the phthisis it was shewn, that vomicas of the lungs were sometimes so concealed, that neither the patients nor physicians suspected any such disease, before pus was thrown up in coughing, or that they found an empyema on opening the body. But if the causes which have a tendency to produce this disease have preceded, if the person be of a cold leucophlegmatic temperament, if the face be somewhat swelled, the feet, legs, thighs, and scrotum swell, then we may be sure of a dropsy; and if then there be a difficulty of breathing, or, on shaking the body, a sound of the fluid moving in the breast be perceived, we have still a more certain diagnostic of this disease. Besides we know, as was observed above, that dropsy of the breast frequently follows a convulsive asthma; wherefore when that one kind of disorder has foregone, we have reason to suspect the other; either cavity of the breast be filled with water, the patients cannot lie on the opposite side; if the water is lodged in both the cavities, they bear an erect position, the body being a little bent forward more easily. An œdematous swelling of the feet not only frequently accompanies this disease, but the breast is also relieved, if the swelling in the legs and feet increases, as I have frequently observed. And, on the contrary, if the swelling in the legs disappears suddenly, the patients are seized with a violent oppression in their breast. Another symptom also frequently shews itself, (although I have not always observed it) which *Piso*<sup>z</sup> held for a certain

<sup>z</sup> De morb. a serosa colluvie, Sect. III. Cap. vii. pag. 243.



tain pathognomonic: his words are, *eam in spirando difficultatem ac crebritatem quæ de subito somni primo tempore invadat & quiete defraudet, sed tamen procedente die sensim lentescat quod signum cum ratio mihi dictaverit, tum experientia in omnibus comprobavit*; that difficult and quickness of breathing, which suddenly comes on towards bed-time, and deprives the patient of rest, but in the day-time gradually abates; which, as reason dictated to me to be a sign of this disorder, so experience in all instances has confirmed my opinion." At the same time he observes, that he has seen a palsy, sometimes of one and sometimes of both arms, in patients labouring under a dropsey of the chest: but though it is very right to attend to the antecedent causes, and all the symptoms above-mentioned; yet an œdema of the external parts, together with a difficulty of breathing, afford room to suspect this disease.

Lymph has also been observed to be collected in the pericardium: it has been said already, that the internal surface of the pericardium is always moist in healthy animals, as are also the heart, the auricles, the sinusses, and the larger vessels contained in the cavity of the pericardium; and certainly there are no where greater causes for producing secretion than here. We learn by anatomical injections, that the pericardium abounds with innumerable arteries, through which the attenuated blood, returning from the lungs, is propelled with great force, by the heart being placed so near; the same thing obtains in all the contents of the pericardium. At the same time there is in these regions a great heat, dissolving the exhaling fluid into a very penetrating vapour; whence in healthy animals there is no collection, stagnation, or corruption of this perspiring fluid. By means of this moist, warm steam constantly exhaling, the pericardium is kept loose from the heart, all concretion between them is prevented, and the

whole surface of the heart, of both auricles, and of the sinusses, arteries, and veins, remains capable of motion and of extension, moist and fit to re-absorb the perspiring fluid: at the same time the callosity and attrition of the parts, which might otherwise be apprehended from this continual motion, is obviated; and certainly, at the same time that the greatest causes, most apt to produce secretion, exist here, the aptness for re-absorption is not less; for the warm exhaling vapour acts with considerable force on the whole concave surface of the pericardium, and the convex surface of the heart and auricles, the veins of the heart are entirely evacuated during the systole, hence are most apt for re-absorbing whatever was excreted by the arteries. It is indeed not true, as physicians formerly believed, that a quantity of fluid was contained in the cavity of the pericardium, to moisten the heart, and temperate its heat. But this dispute is now settled, as this fluid is only found in the body, when it is grown cold after death. In live animals, cut open suddenly, a vapour only breaks forth; and nothing else is found, if the animals are healthy. *Vesalius*<sup>a</sup> long ago tried this experiment, and he says, *vivi canes, involucris cavitationem & cordis superficiem humectatas habent, in hisque nulla disfluentis aquæ observatur quantitas: quum notatū digna (etiamsi fere semper mediocris) in aliquamdiu mortuis canibus occurrat*; “live dogs have the cavity of  
 “the pericardium and the surface of the heart moist,  
 “and in them no quantity of water came away; although a quantity enough to be remarked (although generally but small) is found in dogs that  
 “have been some time dead.” He seems, however, rather to incline to the opinion of those who thought that the pericardium, in its natural state, contained water, although he always speaks doubtfully of this matter. He never dissected a body, without finding water in the pericardium; but he adds, *quin etiam minus*

<sup>a</sup> Lib. VI. Cap. VIII. pag. 506, 507.



*minus fere aquæ in nuper mortuis adinveni quam in his aquorum sectione diutius temperassem*; “but indeed, I generally found less water in animals lately dead, than when I delayed the dissection for a longer time.” But he had also an opportunity of examining this disputed point in living men, who, by dreadful sentence, had their hearts cut out from their bodies while they were yet alive: but he confesses, that he could not commodiously investigate this particular, although he was very near the place of execution; only he says as follows, *aquam etiam in involuero contineri videbatur*, “the pericardium seemed to have water in it.” Afterwards he says, *Patavii pulsans adhuc corcum pulmone reliquisque viscentibus illico atque ex his, quos vivos in quatuor partes diffecant, exemptam erat, in proximam quandoque pharmacopolæ officinam deferri curavimus, ac in involucrio aquam non nullam invenimus*; “once at Patavia we took the heart yet beating, together with the lungs and the rest of the viscera, as soon as it was pulled out from a criminal quartered alive, and had it carried to the shop of an apothecary in the neighbourhood, and we found some water in the pericardium.” Certainly near death all the fluids stagnate in the veins, the right sinus, and the right auricle; hence re-absorption ceases, the arteries, by their own elasticity, straiten their cavity, so that they still propel the fluids; and therefore exhalation lasts longer than re-absorption: besides, although in the instance quoted from *Vesalius*, these viscera were immediately carried from the place of execution to a neighbouring house, they were exposed to the air in the passage, before they could be examined; whence it is easy to conceive, that the exhaling vapours might be so condensed, that some water might be found in the pericardium: and we shall see the reason why some days after death, this fluid was found in greater quantities, if we consider, that after death the arteries are contracted more and more by their

own elasticity, and the cold of the surrounding air, which acts most in the surface of the dead body; by which means the fluids are repelled towards the left ventricle. Now the valves of the aorta stop the entrance into the cavity of the heart; hence a stress is put on the coronary arteries, and through their extremities the thinnest part of the fluids is pressed into the cavity of the pericardium; but the right auricle is distended by the venous blood, repelled by the same cause: now if in a dead body, the internal surface of the right auricle be squeezed, the external surface transudes a thin humour. Add to this, that by the putrefaction now begun, the texture of the blood contained in the vessels of the heart is dissolved, and the blood thus attenuated escapes through their orifices; whence also in dead bodies, a reddish ichor is generally found in the pericardium. These causes seem sufficient to account for our finding, in this cavity after death, a spoonful or two of a watery fluid, which is the quantity that *Diemerbroek*<sup>b</sup> says he generally found in dead bodies in a natural state.

But as, from the causes now explained, the exhalation of vapour is so considerable, if the re-absorption be obstructed by any cause, a fluid will be collected in the pericardium, even in no small quantity. Nor does this disease seem to be unfrequent, as the history of physic furnishes numerous cases of this kind. Sometimes this disorder accompanies a dropsy of the breast; sometimes the pericardium alone has been found dropfical<sup>c</sup>. *Senac* relates many cases of this nature, in his most useful treatise on the heart<sup>d</sup>. But it is not easy to form a certain diagnostic, by which we may know when there is a dropsy of the pericardium, as *Senac*<sup>e</sup> has with great prudence remarked; principally because this disease con-

curs,

<sup>b</sup> Anatom. Lib. II. Cap. v. pag. 262. <sup>c</sup> *Sinopei Parerg. Med.* pag. 46—51. *Barrere Observat. Anatom.* pag. 81, 83, 86, 89, 91. <sup>d</sup> *De la Structure du Coeur*, Liv. IV. Chap. v. Tom. II. pag. 354, & seq. <sup>e</sup> *Ibidem*, pag. 356, & seq.



rs, in many of its appearances, with a dropsy of  
 e breast, and with disorders of the lungs and  
 art, polypusses, &c. whence the symptoms ob-  
 ved while the person is living cannot be solely as-  
 bed with certainty to a dropsy of the pericardium,  
 hich is discovered by dissection after death. Be-  
 es, it is certain, that in the beginning of the dis-  
 e, when the pericardium is but moderately dis-  
 nded, less grievous symptoms arise, than when it  
 greatly swelled with collected lymph. A sensation  
 oppression and straitness about the fore part of the  
 est, which is the seat of the pericardium, may  
 m most distinctly to point out this disease. At  
 e same time it is evident, that the lungs, which are  
 near the pericardium, must be compressed when  
 s latter is swelled; and thus breathing will be  
 ore difficult, and the dry teasing cough will return  
 ore frequently: but as the pericardium does not  
 y lie close upon the tendinous part of the dia-  
 gram, but adheres firmly thereto, in that part of  
 which answers to the lower flat part of the heart,  
 seems probable, that the pericardium, when dis-  
 ded with water, will render the motion of the  
 phragm more difficult. Besides, the motion of  
 e heart will be disturbed, from whence will pro-  
 d palpitations, inequalities of the pulse, and  
 netimes also a syncope, preceded by a sensation of  
 tant suffocation as it were.

*Barrere*<sup>f</sup> enumerates symptoms of this kind in  
 e patients, who were found, upon dissection, to  
 ve had a dropsy of the pericardium; on which ac-  
 unt he reckons as diagnostics of this disease, an  
 edema of the feet, a pale countenance, a small  
 ick pulse, obstructed respiration, difficulty of ly-  
 g down in bed, together with a sensation of suffo-  
 ion, recurring from time to time: however, he ac-  
 owledges, that it is difficult to distinguish a dropsy  
 the pericardium from a dropsy of the breast.

*Senac* has very carefully enumerated the symptoms of this disorder<sup>g</sup>, as well from approved authors, from his own observations; and particularly adds a sign, which seems more certain than any of the rest, *viz.* an undulatory motion is perceived between the third, fourth, and fifth ribs, when the heart palpitates. It is indeed true, that in a palpitation of the heart, although there be no dropsy of the pericardium, something like this is perceived; but that that kind of fluctuation, which extends itself for considerable space, is not felt. Perhaps, however, if the pericardium be very much distended, this fluctuation may not be so distinctly perceived.

*Diemerbroek*<sup>h</sup> denies that there was any palpitation in an *Englishman*, in whose pericardium he found two pints of water: nor does *Barrere* mention the symptom in his five patients; he only speaks of a small quick pulse, such as sometimes attends a palpitation of the heart. Besides, it seems probable, that a difficulty in the motion of the heart, will be more sensible in the breast, when a large quantity of water is lodged between the ribs and the point of the heart.

Hence *Senac*<sup>i</sup> very prudently concludes, that the signs above enumerated, if they do not produce an absolute certainty, yet at least afford room to suspect the existence of this concealed disease.

At the same time it is easy to see, if so many and great evils follow the collection of watery serum in the pericardium, much worse are to be expected, if this serum degenerates and becomes acrid; and thus perpetually stimulates that irritable viscus, the heart. *Vilussens*<sup>k</sup> found the liquor in the pericardium to be an alkaline. *Barrere*<sup>l</sup> found the pericardium an

<sup>g</sup> De la Structure du Coeur, Liv. IV. Chap. v. Tom. II. pag. 356, & seq. <sup>h</sup> Anatom. Lib. II. Cap. iv. pag. 261. <sup>i</sup> loco citato, pag. 364. <sup>k</sup> Ibidem, pag. 369. <sup>l</sup> Observa Anatom. pag. 86, & seq.



the surface of the heart, smeared over with a matter resembling curdled milk.

A dropsy of the chest, therefore, has its seat principally in three cavities, the pericardium, and the right and left cavity of the breast; for that place of the mediastinum, in which the thymus gland is situated, is small; and I do not remember to have ever read, that a dropsy was found there: and if water should be collected on the back part between the dividing lamellæ of the mediastinum, it would easily be diffused through the cellular membrane, as was said before.

How to proceed in the cure of a dropsy, we shall see hereafter: and §. 1231. among the general indications of the cure, this is reckoned; *ut aquæ inter cavitates effusæ educantur*, that “the waters effused” into the cavities should be drawn from thence:” and this is to be attempted two ways; for physicians endeavour to draw off the extravasated lymph, by stool, urine, sweat, &c. In this case, the fluid must first of all be absorbed by the veins, from the cavity in which it is effused; or if this has been tried without success, they make an issue for it by art, by which the collected lymph may discharge itself from the body; and afterwards endeavour to remove the causes which produced the dropsy. We shall speak hereafter of the first method; but here we are to consider, whether a passage may be procured, and by what means. The operation performed for this end, is a puncture of the chest, and called paracentesis, or tapping.

It is certain, that this operation does not remove the cause of this disease: but it frees the patient from the danger of instant suffocation, and by this means time is gained, and an opportunity afforded for the physician to attack the cause of the disease by suitable remedies. Nay (as will be shewn hereafter) tapping frequently repeated prolongs life, and renders it more supportable, even when it is beyond the reach of art to remove

move the causes of the disease. Wherefore it does not seem reasonable to condemn this operation of the paracentesis of the thorax, as some who are very famous in our art have done. It is a common complaint of the surgeons, that the water cannot be drawn off, without hazard of life, as *Brunner*<sup>m</sup> has remarked; and that therefore, on account of its general bad success, it was banished from the practice of physicians; and he was much surprized to find a person who had an empyema recover, from whom he had drawn, in three days time, twelve pints of a reddish matter; and tells, of a paracentesis of the thorax being attended with a very fatal event. *La Motte*<sup>n</sup> positively asserts, that all dropfies of the breast are mortal, and entirely disapproves of the paracentesis. He knew indeed, that the ancients recommended tapping for a dropfy of the breast; yet he absolutely pronounces it destructive, and that no one ever tried it with success. However, as we shall see presently, *Hippocrates* advises this method of drawing the water out of the breast; and from his expressions it should seem, that some persons had been preserved by it. A dropfy of the pericardium was accounted much more fatal, as it was thought that the puncture of this membrane was inevitably mortal. Nay, physicians have advised not to fatigue the patients with remedies in this disease, which they thought absolutely incurable°. It is easy to see, that very little hope remains, if the collected serum has lodged long in these cavities, and macerated the vital organs; or if it be grown so acrid by length of time, as to corrode these viscera: for in such a case death, though following on the paracentesis, is not to be ascribed to that operation, but to its not having been performed soon enough, and before the serum had had time to grow acrid and taint the viscera: and, generally speaking, it

<sup>m</sup> De Glandul. Duodeni, pag. 84, 85.  
Chirurgie, Tom. II. pag. 189.

<sup>n</sup> Traité compl. de  
Barrere Observat. Anatom. pag. 93.



is late before recourse is had to this operation; the friends of the patients, and sometimes the physicians themselves, through timidity, hesitating too long about it.

Thus we read in *Peyerus*<sup>p</sup>, that above three pints of an acrid, muddy fluid were found in the pericardium, which fluid had corroded the substance of the heart: numerous observations evince, that the lungs are sometimes greatly injured by the like causes; as also the abdominal viscera in an ascites, of which we shall speak hereafter. Nevertheless, a paracentesis of the chest is an operation, which has been performed, both by ancient and modern physicians, with good success.

*Hippocrates*<sup>q</sup> has described this species of dropsy, and tells us, that it arises chiefly, when any one in hot weather, urged by vehement thirst, drinks plenty of water, and the lungs are filled and discharge the water on the breast. He says, there comes on a dry cough, the fauces grow rough; then follow shiverings, feverishness, and an orthopnoia; the body grows bulky, the feet swell: such patients, he remarks, have like symptoms with those who have an empyema; but less violent in degree, and of longer duration. He adds, that in some patients the belly, the rotum, and the face, are swelled; but says, this only happens, *si tempus sectionis præterieris*, “if you delay the puncture too long.” He bids the physicians, holding his ear to the patient’s side, to listen to the noise of the water fluctuating in the breast, as heaves up and down in respiration. The words of this passage indeed are<sup>r</sup>, *si diutius aure ad latera admota auscultaveris, intrinsecus velut acetum olet*; “if you hold your ear close to the side for a considerable time, there is a smell of vinegar within.” But the place is manifestly corrupt; for who ever holds

<sup>p</sup> Parerg. Anatom. & Med. pag. 150, 151.      <sup>q</sup> De Morbis, lib. II. Cap. xxiv. Charter Tom. VII. pag. 576. & de Intern. affect. Cap. xxiv. Ibidem, pag. 655.      <sup>r</sup> Ibidem, pag. 576.

holds their ear to any thing, to find out the sound of it? And from the following words, and the other<sup>s</sup> passage quoted, it is evident, the ear is to be held to the side, that we may know whether there is any water in the thorax, and in what part thereof is lodged, to the end that it may be drawn off from thence. Next he bids us observe, whether the thorax is protuberant, then orders the incision to be made in that part which is protuberant; but if there be no protuberance, then he directs, that the patient having drank many warm potions, should be laid on by the shoulders, and shaken, as is the custom in persons afflicted with an empyema; and then the physician is to listen, in order to discern on which side is the greatest fluctuation: when this is discovered, he orders the puncture to be performed upon the third rib from the lowest rib.

Then he says, the rib itself must be pierced with a small bore, that a small quantity of the water may be let out; then he directs, that the hole should be plugged up with raw flax, and a soft sponge be put over it, and the whole apparatus be secured with a proper bandage. A part of the water was let out every day; but on the thirteenth day, all the water which yet remained in the cavity of the breast, was let out, and afterwards, if water was found to be collected anew, it was discharged in the same manner. He ordered at the same time, drying food and warm medicines; and tells us, that scarifying is to be used boldly, if the scrotum and legs swell.

It is to be observed, however, that *Hippocrates* let out the water from the breast not all at once, but at different times: for it was formerly a general rule never to draw out the humours, which had been preternaturally collected from the larger cavities of the body all at once. Whence we read in the aphorisms *qui suppurati aut hydropici uruntur pure aut aqua confertim*

\* Ibidem, pag. 656.  
Tom. IX. pag. 263.

\* Lect. VI. Aphor. xxvii. Chartes



*infertim effluente intereunt*; “ they who are cauterized for a dropsy or an empyema, if the water or pus flow out all at once, they die.” *Galen* asserts the same thing, in his commentary on this aphorism, and confirms it by the testimony of *Erastetratus*; and cautions us, that the same danger is to be apprehended in other parts of the body equally as in the thorax, if large abscesses are suddenly opened, in such a manner as that the pus is all evacuated by one discharge; and he gives the following reason for it: *Quædam quedam arteriosa recludi videntur quæ prius operculi vice pus habebant, quo derepente evacuato, multus spiritus cum eo excernitur, unde detrimentum ægrotantibus accidit*; “ some arteries seem to be opened, to which the pus before served as a lid or stopper; which pus being suddenly discharged, much air flies off with it, to the great detriment of the patients.” And as a dropsy often has for its cause schirrus, he feared, lest if all the water were suddenly let out from the breast, the schirrus, perhaps, no longer supported by this fluid, should oppress the diaphragm by its weight, or some of the viscera near the thorax. This seems to be the reason why *Hippocrates* did not make the puncture for letting out the water in the soft parts of the thorax, which are used to coalesce again sooner; but to have bored through the ribs, that the passage might remain longer open.

It is indeed true, that the viscera, long soaked and macerated by the water floating all around them, are frequently so softened, that as soon as the equal pressure of the surrounding water is removed, the vessels are burst by the impetus of the circulating blood; but this does not happen, unless the puncture be too long delayed, and the watery serum have had time to grow acrid by long stagnation: besides, as will be seen hereafter, when we treat of the paracentesis of the abdomen, by a proper bandage the viscera may be so well sustained, while the water flows out,

as to maintain an equable pressure, and then all the water may safely be drawn off at once: for there is a danger, lest, if the evacuation be divided into different times, the air may find admission into the cavity, and hasten the putrefaction of the extravasated fluid.

And less danger, it should seem, is to be apprehended, for evacuating the whole fluid by one operation, in a dropsy of the chest, than in the other kinds; as the lungs, before oppressed by the surrounding water, now freed from that pressure, are expanded by the air drawn in by respiration, and fill the whole cavity of the breast when it is emptied of the water: wherefore, unless the lungs be altogether decayed, the water may safely enough be drawn off at once.

From what has been said it appears, at least, that the paracentesis of the thorax was in use among the ancient physicians; and that many persons survive after the water was drawn off. For *Hippocrates*<sup>w</sup> expressly says, *si quinto die linimentum pure obductum fuit plerumque evadit; sin vero hoc non contigerit, postquam aquam exhauseris sitis corripit ac tussis & moritur* “ if on the fifth day the pledget be smeared with pus, the patient generally survives; but otherwise, he is seized with thirst and a cough, and dies.”

But the observations of the moderns also shew, that the paracentesis of the thorax may be of use in a dropsy of the breast; and that in a case, where there seemed to be but little hope. Monsieur *Du Verney* relates a history of a woman, whose pulse was low and unequal, and her breathing exceeding difficult: and she laboured not only with a dropsy of the breast, but also with an ascites. Having first of all emptied the abdomen of its water by tapping, some days after,

<sup>w</sup> De Morbis, Lib. II. Cap. xxiv. Charter Tom. VII. pag. 576.  
<sup>x</sup> Academ. des Sciences, L'An. 1703. Memoir. pag. 199.



after, with a trochar, he pierced the chest between the second and third spurious rib, in a place as near the back-bone as could be done; and by this means drew off all the water with so good success, that she was immediately able to breathe freely, and in a month's time returned to her employments.

*Bianchi*<sup>y</sup> saw a paracentesis of the thorax boldly and successfully tried in a recent dropfy of the breast, and on a stout young man; but he confesses, that he has not often ventured on this operation.

Nor is *Bianchi* alone fearful in this matter: *Senac* complains, that almost all physicians leave persons in a dropfy of the breast, to their<sup>z</sup> fate; whereas his own experience convinced him of the usefulness of the paracentesis. After the patient had been cured of a pleurisy, there remained so great a difficulty of breathing, that he could not breathe otherwise than sitting up right; the disorder increasing so much, that he seemed in danger of suffocation: the thorax was pierced, and there came out six pints of a yellow transparent water; this discharge continued for some days, and in a month's time he was quite cured, and able to accompany the king in hunting on a swift horse. *Morand*<sup>a</sup> also grieves, that in *France*, where surgery is so much cultivated, that the paracentesis of the thorax is very rarely performed for the cure of a dropfy of the breast: he had often seen the anatomy-school afloat with water, when the breasts of dead persons were opened. This celebrated surgeon, in a desperate case, drew off at once six pints of water; towards the end of the operation a considerable quantity of pus followed; the patient, who had seemed just dying, revived instantly: in a week after the same oppression of the breast returned with such insupportable violence, that a passage was obliged to be opened for the extravasated

<sup>y</sup> Hist. Hepat. Tom. I. pag. 662. <sup>z</sup> Traité de la Structure du Coeur, Tom. II. pag. 366. <sup>a</sup> Mem. de l'Acad. de Chirurgie, Tom. II. pag. 547.

rated fluid, no longer by the trochar, as before but an incision in the intercostal space, as usual for an empyema: five pints more of water came out, and towards the end, a greater quantity of pus than before; and altho' the patient seemed in danger of perishing by a marasmus, yet he was entirely cured of so great a disease. It is to be noted, that all the water contained in the cavity of the breast was let out at each time; and although, together with the dropsy, there were manifest tokens of suppuration, yet the cure succeeded happily. At the same time it is worthy to be remarked, that so great a quantity of water lodged in the cavity of the thorax, must have squeezed the lungs into a narrow space; nor, perhaps, were they afterwards fully expanded, as it is scarce possible, that the air could have entirely been barred access into the cavity of the thorax, especially when the intercostal space was divided by a pretty large incision: hence we understand how a lancet could be introduced to the length of four or five inches, without any resistance. When all the extravasated fluid is let out, and no new quantity accumulates for some days, the air contained in the cavity of the breast must be let out; and then the lungs, distended by the air taken in by inspiration, will become contiguous to the pleura, and fill up the whole cavity of the breast. By what means this is to be done, was amply explained §. 304 where we treated of the cure of wounds of the thorax.

If physicians and surgeons have been too timid in drawing the water from the cavity of the thorax, how bold an undertaking must it seem, for any one to attempt piercing the pericardium when it is distended with water. We have already seen, indeed, that it was difficult, but yet not altogether impossible, to discover a dropsy of the pericardium, by certain diagnostics: if, therefore, we should be satisfied of the existence of the disease, and all those remedies, which will be mentioned



oned hereafter in treating of the cure of a dropsy :  
 nothing remains, but either to abandon the patient  
 to certain death, or to procure an outlet by art for  
 the extravasated fluid. No prudent man will deny, that  
 there are many dangers in this case : the heart may  
 have contracted some incurable disorder, which will  
 bring on death after the water is let out : some fault  
 may be concealed, which obstructs the easy re-ab-  
 sorption of the fluid exhaled from the arteries :  
 hence, although we succeed in letting out all the wa-  
 ter, the complaint will soon return. The pericardium  
 has been found distended with blood, with ichor,  
 and with air <sup>b</sup>. The heart, which is in constant mo-  
 tion, may be hurt by the instrument. All these dif-  
 ficulties have been the cause, that this operation  
 has never been attempted : at least, I do not ever  
 remember to have read of the paracentesis of the  
 pericardium being performed : however, it is a ge-  
 nerally approved rule, that a doubtful remedy is  
 better than none. We are told <sup>c</sup>, that this opera-  
 tion may be performed in the following manner :  
 a hole is to be bored with a trochar, between  
 the third and fourth rib on the left side, at two  
 inches distance from the sternum, in such a manner,  
 that the point of the needle be directed towards the  
 origin of the ensiform cartilage, and that the nee-  
 dle may pass close to the ribs : by this means, the  
 operator will not be in danger of hurting the heart,  
 the lungs, or the mammary artery.

At the same time it is worth observing, that phy-  
 sicians ought to be cautious, how they positively  
 retel what fluid will come out, upon piercing the  
 thorax ; especially, if inflammatory disorders have  
 preceded the dropsy of the breast. In the instances  
 first mentioned, we saw, that there came out first  
 plenty of watery serum, and afterwards, a consi-  
 derable quantity of pus : sometimes also, other vi-

VOL. XII.

T

tiated

<sup>b</sup> Senac Traité de la Structure du Coeur, Tom. II. pag. 353,

<sup>c</sup> Ibidem, pag. 365, 366.

tiated humours are concealed in the cavity of the thorax. In the body of a very robust, brawney tall man, who, on account of his great fleshiness and the gross eatables found in his stomach, seemed in no very bad state of health before his death, there were contained, among other things, in the right cavity of the thorax, twelve pints of a greyish fluid, which smelt like fresh liquorice root; which smell, at first not disagreeable, grew stronger by degrees, till it became nauseous. This fluid was different from ichor, by being thinner, and more homogeneous; but was whiter and more fluid than laudable pus. Although it was five days after the man's death that the thorax was opened, this liquor shewed no signs of putrefaction; and, when put in a digester, it smelt sour, and separated into two parts; of which one was weightier than the other, and subsided like curds, and was mucous and yellowish: the other was much thinner, inclining green, and swam suspended in the first. After many days, the ascendent smell changed to a putrid, nauseous, alkaline smell. The ductus thoracicus was found, and the œsophagus uninjured all through; nor did there appear any large broken lymphatic in the thorax; but in the left cavity of the breast, there was found a great quantity of lymph, inclining to a red colour.

Many other things worthy of note were observed in the dissection of this dead body, but which do not belong to this subject. It is sufficient for our present purpose, to remark, that two so very different fluids were found in the two cavities of the heart: so that it becomes physicians to be cautious how they positively determine, what kind of fluid contained in the thorax, lest they should afford occasion of cavilling to malevolent or ignorant men who often expect more from a physician, than with

<sup>a</sup> Cornel. Henr. Velfe Dissert. Misc. Anat. Pract. pag. 30 & seq.



within the reach of this art. For it is easy to see, that the different nature of the fluid affects not the method of cure; as the indication is, these cures are to remove that which straitens the breast and oppresses the lungs, of what quality soever it be.

What is proper to be done after the water is drawn out from the thorax, will be mentioned hereafter, when we come to treat of the general method of curing a dropsy.

### S E C T. MCCXX.

**T**HE lungs have also been found to be oppressed sometimes with hydatides, sometimes with dropfical vomicas, from lymph collected and extravasated, and lodged in the larger sinusses; and this is a disease certainly difficult to be discovered, and to be cured, unless other symptoms, by the treatment which is necessary for them, fortuitously produce the cure of this kind of dropsy.

A dropsy of the lungs themselves is truly a very wonderful disorder, and very difficult to discover. This viscus we know consists of veins and arteries, and besides these of air-vessels. Watery serum cannot be collected in veins and arteries, through which the fluids are constantly urged on by the impelling force of the neighbouring heart; nor in the air-vessels, because any fluids beginning to lodge there would immediately be expelled by a cough; or, if that failed, instant suffocation would ensue. But anatomy teaches us\*, that these three kinds of vessels in the lungs, are collected by a cellular membrane conspicuous enough, which never has any fat in it. It is easy to demonstrate this cellular membrane, if, making a slight incision in the external

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\* Kaau Perspir. dict. Hippocr. pag. 64.

membrane of the lungs, and cautiously passing a small tube between the lobes that lie close by each other, air be blown in; for then all the lungs swell as the air pervades all the conjunction of the vesicle and vessels, and thus this cellular membrane is filled and rendered conspicuous. But it appears much more distinct, if, after injecting the blood-vessel with wax, the lungs are inflated with air and dried for then, if a small portion of the lungs thus prepared be viewed through a microscope, one discerns the *folliculi Malpighiani*, on the membranes whereof innumerable vessels are distributed; and besides these it evidently appears that the spaces left between these folliculi contain a cellular membrane, over which also are dispersed a prodigious number of small vessels. I have preparations of this kind in my possession which plainly demonstrate this. In this cellular membrane extravasated lymph may be collected, as well as in any other parts of the body, and produce a real dropsy of the lungs, whenever the subtle steam which the arteries perpetually exhale, ceases to be entirely taken back into the blood by the absorbent veins, by whatever cause this is occasioned. Now the lymph thus distending, the cellular membrane may form tumours of various sizes, watery vomicae and hydatides; and by compressing the adjacent vessels, and particularly the membranous extremities of the bronchia, disturb the action of the lungs in various manners. Nor will this seem strange, if we consider that purulent vomicas are formed in this very cellular membrane.

*Hippocrates*<sup>f</sup> seems to have described this disease we mentioned the passage of *Hippocrates's* works, to which we refer, in the preceding paragraph: it was there remarked, that he directs the physician to put his ear to the patient's sides, to find by the noise of the fluctuating water where it was lodged; he says then *intrinsecus velut acetum olet*, "it smells within" "lik

<sup>f</sup> De morb. Lib. II. Cap. xxiv. Charter Tom. VII. pag. 576.



“like vinegar:” this undoubtedly is nonsense, but *Cornarius* reads instead of ὡς ἐν, it smells, ζῆν, it boils. Before, when we treated of the peripneumony, §. 848. we said, that a noise resembling the hissing of boiling water in a kettle covered with the lid, was accounted a very bad symptom, which hissing noise the physicians call the wheezing of the lungs. At the same time it was noted, that this happened principally, when the blood-vessels being obstructed and distended compress the bronchia, whence the free passage of the air was impeded, and the collected frothy mucus agitated together with the air in the lungs, not easily cleared away, causes this disagreeable noise. But what I would principally observe at present is, that then a passage from *Hippocrates’s* prognostics was quoted, in which the very word ζῆν occurs, when *pulmo plenus in gutture fervet*, “the  
“full lungs boil in the breast.” Now when wine by the second fermentation turns to vinegar, a like noise is heard in the casks. This will help us to understand the passage now mentioned, which, without the emendation proposed by *Cornarius*, is absolutely unintelligible.

But that *Hippocrates* has in his eye a dropsey of the lungs, is plain from what immediately follows; *Et aliquamdiu his afficitur, sed postea in ventrem (πρὸς τὴν κοιλίην) erumpit, confestimque sanus, Et morbo liberatus videtur*; “and for some time the patient labours  
“under these complaints, but afterwards it passes to  
“the belly, and he presently seems recovered and  
“free from the disease.” For if the cellular membrane of the lungs be filled with watery serum, or this serum have formed a large hydatid tumour, great oppression in the breathing follows from the bronchia being compressed, as also a dry cough, &c. But as soon as this watery tumour bursts, and discharges its lymph into the cavity of the thorax, all these symptoms cease, the dropsey of the lungs being converted into a dropsey of the thorax: and that *Hip-*

*pocrates*, by the word κοιλίη, i. e. hollow, which sometimes signifies the belly, meant here the cavity of the thorax, is evident, because he soon after calls the abdomen not simply κοιλίην, but κοιλίην τὴν κάτω the lower cavity, or γαστέρα, the belly.

But he speaks still more plainly of these cases elsewhere<sup>s</sup>: *gignitur etiam ubi tubercula in pulmone exorta fuerint, & aqua repleta in pectus eruperint. Quod autem a tuberculis oriatur hydrops, mihi argumento sunt boves, canes & sues. In his enim quadrupedibus maxime pulmonis tubercula oriuntur, quæ aquam continent. Sectione namque facta citissime cognoveris, nam aqua effluet talia autem multo magis etiam in homine quam in pecoribus fieri videntur, quanto morbosâ magis etiam victu ratione utimur*: “this (the dropsy) is produced also  
 “ when tubercles are formed in the lungs, and these  
 “ tumours being distended burst into the breast: and  
 “ that a dropsy is sometimes caused by these tu-  
 “ mours, oxen, dogs, and swine, afford a proof  
 “ for tubercles of the lungs are principally formed  
 “ in these quadrupeds, which tumours are full of  
 “ water, and this you will find on cutting them, for  
 “ then the water will flow out; and such tubercles are  
 “ more likely to be formed in us than in quadrupeds, as our diet is less regular.”

On another occasion, §. 1062. I observed, that professor *Ruysch*, in three bodies of persons who had been afflicted with an asthma before their death, found in the lungs a collection of transparent bladders distended with air, from whence he could not expect the air by a slight compression; nor had the air blown in by the aspera arteria any communication with these distended bladders, which, being pierced with a needle, let out the air and subsided. I then endeavoured to give the reason of this, which I there said was, that the mesochondriac muscles having become paralytic, the extremities of the bronchia remained distended with air, the ramifications of the  
 aspera

<sup>s</sup> De intern. affect. Cap. xxiv. Charter. Tom. VII. pag. 656.



aspera arteria which belonged to these vesicles having grown together by some cause or other; but perhaps it will appear more likely, that the cellular membrane of the lungs was distended with air, so that a kind of emphysema of the lungs was produced, which compressed the air-bladders of the lungs, and thus impeded respiration. Then we easily see, why air blown into the aspera arteria did not penetrate these cells; as also why, when the air was violently impelled into the aspera arteria, some of these bladders were burst. The air contained in our fluids being disengaged from them might, as was said in the chapter of flatulencies, distend the cellular membrane of the lungs, or pass into it from the ruptured or corroded extremities of the bronchia: but when once the air had gained entrance into the cellular membrane, it could not so easily be expelled by the same way by which it was admitted there; as was observed before, when we spoke of the emphysema which sometimes follows wounds of the head, and more particularly of the thorax. And *Ruyfch* had good reason to believe, that this was a more frequent cause of asthma than is generally imagined.

*Albertini*<sup>h</sup> observed such an œdema of the lungs, and made it a diagnostic, if, together with an œdema of the external parts just beginning, a difficulty of breathing presently comes on: for reason teaches, and the testimony of *Hippocrates* quoted above, confirms it, that respiration will be more impeded by a small quantity of serum collected in the interstices of the lungs themselves, than by a much greater quantity extravasated into the cavity of the breast. *Albertini* also remarks, that the lungs are more easily freed from serum lodged in their interstices, than when serum is extravasated and lodged in the cavity of the breast: for he had seen many patients, who from various causes suddenly swelled all over, and

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<sup>h</sup> Institut. Bonon. Tom. I. pag. 392, 393.

principally in the hands and feet, and at the same time were oppressed with a great difficulty of breathing who however recovered, without any great trouble by the use of gentle hydragogues, diuretics, &c. from whence he concluded, that their asthmatic complaints took their rise from an œdema of the lungs. It is a remarkable observation of Dr. *Simson*<sup>h</sup> that he always suspected an œdema, or dropical swelling of the lungs, if either the face was turgid or there was ever so small a swelling about the ankles and at the same time a difficulty of breathing; especially if the pulse was also so suppressed, that it could scarce be felt. He happily cured a woman, who seemed in danger of instant suffocation, by giving her calomel. Certainly, if we consider that the veins of the lungs are most freely emptied during the diastole of the heart, and that there is a great heat, and a quick circulation of the fluids here, there seems to be a good prospect of the extravasated fluid being re-absorbed; especially, if in the beginning of the disease hydragogues are prudently administered: hence *Albertini* saw diuretics, purging, and even bleeding, to have been of service. He affirms, that he found by dissection that this is sometimes the seat of a dropsy: although he confesses, that he has but seldom found a dropsy in the lungs; partly, because it is more easily cured than the other kinds, and partly, if the disease be obstinate, it is easily converted, by the bursting of the watery vomica, into a dropsy of the chest.

A very remarkable case of this disease is described by *Maloet*<sup>i</sup>. A soldier was afflicted with a very grievous asthma, together with a slow fever; he could not lie, either on his back or on either side, without great uneasiness; hence, he was obliged almost always to keep in an erect posture: his arms, hands, legs and feet, were œdematous: this excellent physician suspected a dropsy of the chest; but,

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<sup>h</sup> Medical Essays, Tom. V. Part 2. pag. 627, 628.  
des Sciences l'An. 1732. Mem. pag. 350, & seq.

<sup>i</sup> Acad.



On a strict examination, he found no fluctuation, nor had the patient himself ever perceived any thing like it, nor were there other symptoms which usually accompany that disease; he changed his opinion. The unhappy man received but little relief from the medicines administered to him; and, after languishing for two years, died. His body was opened; no extravasated serum was found in the cavity of the thorax, but in each lobe of the lungs was a watery vomica, which contained about six ounces of clear transparent serum. This serum was inclosed in a peculiar cyst, whose sides were about a line in thickness, composed of different lamellæ lying one on the other, and in which neither any vessels nor glands appeared; they were capable however of being stretched longitudinally, and contracted themselves again by their own elasticity when the tension ceased; but on being roughly rubbed by the fingers, these membranes were squeezed into a mucous substance. It is well remarked at the same time, that the extravasated serum was not lodged in the bronchia, but in the cellular membrane, which occupies the interstices of the greater and smaller lobes of the lungs.

This observation confirms the propriety of the diagnostics mentioned above: for in this case the extremities of the body were œdematous, the symptoms of a dropsy of the thorax did not appear, and a great difficulty of breathing was caused by a few ounces of limpid serum.

The writer just mentioned, seems to be of opinion, that the lamellated membranes which formed these cysti, were not of an organical structure, but formed from the contained fluid, as neither fibres nor vessels were visible in them. Very celebrated anatomists have long been of this opinion, that the substance of the cellular membrane is not properly to be called vascular; at least, that vessels have not yet been demonstrated in this part, but numerous vessels are distributed

distributed along this cellular coat, which envelopes the vessels dispersed over the viscera, and every where accompanies them. It is well known to those who have cultivated the more subtle anatomy, that after the most successful injections, something remains not filled with the matter of the injection in the structure of the viscera; which, unless it be removed by maceration, or some other management, obscures the neatness of the preparation; this seems principally to depend on the cellular membrane. The reader may consult on this subject *Haller*<sup>k</sup>, where he treats of the cellular membrane. I have in my possession such kinds of anatomical preparations, which (the whole cellular membrane being removed) exhibit to the sight, assisted by the microscope, the wonderful course of the vessels in each of the viscera. It does not therefore seem impossible, that the cellular membrane may sometimes form a cyst, in which the accumulated lymph lodges: besides, we know that membranes, preternaturally distended, do not always grow thin, but sometimes become thicker. Purulent vomicæ of the lungs seem also to lodge in this cellular tunic, which is all over the body the seat of inflammatory tumours, and of the consequent suppurations: now these vomicæ have often been found to have thick, and even considerably solid sides.

*Barrere*<sup>l</sup> declares, that he has found an œdema of the lungs by dissection; and once also, in the concave part of the right lobe of the lungs, he found two bladders full of air, of which one was as big as the thumb, and the other as an hen's egg. *Storck*<sup>m</sup> saw an emphysema of the whole lungs. But a dropsy of the lungs may end three different ways: for either the extravasated serum, being re-absorbed, may be evacuated from the body by the common emunctories, and thus the lungs be relieved, as was said before;

<sup>k</sup> *Primæ Lin. Physiol.* pag. 15, & seq. <sup>l</sup> *Observat. Anatom.* pag. 109, & seq. <sup>m</sup> *Ann. Medic.* pag. 118.



fore; or the dropfical tumour may burft into the cavity of the breast, and produce a dropfy of the chest; or may pour its contained lymph into the bronchia, and be thrown out by a cough; in which case there is the same danger as in a purulent vomica, that is, lest the bronchia be overwhelmed at once by a sudden discharge, and the patient suffocated.

But if the extravasated serum can be thrown up by coughing, and has not acquired any great acrimony, there is more hope of a cure than in the case of a purulent vomica; of which however (as was said before) many have recovered.

Two medical observations confirm this<sup>n</sup>. A nobleman of 60, four years after a catarrh, which had been neglected, was taken with an asthma, accompanied with a very troublesome cough at intervals: he had a difficulty in his speech, and once his legs swelled for some days. It happened, while he was one day lifting up his right arm, he felt as though something burft in his breast; and presently, with a violent cough, he threw up a matter without taste or smell, like the white of an egg, so as to throw up four pints in three quarters of an hour; and when he had rested a little in bed he found himself better, and his pulse was good. When a happy consequence was expected from this, the same discharge returned ten hours afterwards, so as that he threw up three pints of a like matter in twenty minutes: but he was not relieved by this discharge; the oppression on his breast increased, his strength sunk, and soon after he died suffocated. It is probable, there were two such vomicæ as we have mentioned. There is an instance of the same kind, but with a more fortunate event, in a robust youth, who, after having undergone a pleurisy, complained of a slight oppression, and a sensation of a weight near the place where the pain had been. Forty days after, he felt on a sudden some-

<sup>n</sup> Targioni Tozzetti prima raccolta di observat. Mediche, pag. 83, & seq.

something as it were burst in his breast; soon there followed a great oppression, and a most violent cough; and within an hour he threw up four pints of a matter, like that of the former case, and recovered.

If there were a suspicion of such a disease, the same things might be tried as were recommended §. 857. for promoting the rupture of a purulent vomica. Certainly, in the case last mentioned, one should rather have expected an abscess; however, whether pus, or extravasated serum, be lodged in the lungs, we should endeavour to draw it out.

### S E C T. MCCXXI.

**N**AY, the aspera arteria itself, on its anterior and conspicuous part, collecting, from whatsoever cause, stagnating lymph, often exhibits a species of the bronchocele; which, as it is easy to discover, the cure thereof is to be attempted by puncture, discutients, revellents, if, as authors write, it is ever observed.

Tumours frequently appear in the anterior conspicuous part of the trachea, and frequently of a great size; which, as they are thought to be occasioned by any very great straining, by loud crying, or the struggles of a woman in labour, have been referred to herniæ, or ruptures, and bronchoceles. But as the thyroeid gland, which in men is four inches long, by its anterior part lies close on the segments of the aspera arteria, and is there narrower and wider where it covers the sides of the thyroeid cartilage; hence this gland is generally accounted the seat of these swellings. Monsieur *Lalouette* ° has bestowed much pains in examining the structure and use of this gland,

° Mem. de mathem. & physique presentes à l'Academ. Tom. I. pag. 160.



gland, both in the human body and in brutes; he found the internal structure to consist of innumerable, round, transparent corpuscles; from which, on incision, flowed a yellow humour, very viscid, but soon disappearing: making a slight wound with the point of a lancet, he blew in air through a pipe, on which the thyroeid gland swelled greatly, and he saw those small round bodies rise and swell; but when he blew the air through the arteries or veins, these bodies did not swell. It happened<sup>p</sup>, that while a child-bearing woman held in her breath strongly, in violent efforts of labour, the left side of the thyroeid gland swelled considerably; which swelling was found, on opening the body, to contain only air, and a few drops of a thin yellow liquor. From whence it seems very probable, that the air retained in the aspera arteria found a way, by the woman's violent efforts, to pass into the substance of this gland. As therefore considerable arteries tend to this gland, and veins return therefrom, and it consists of innumerable, round, hollow, small bodies, containing a fluid, all this apparatus seems to be designed for the secretion of some humour; if when it is collected in these round follicles it be hindered from being evacuated, may distend them more and more by degrees, and produce considerable swellings.

However, that such tumours in these parts are not formed solely in the thyroeid gland, is plain from the two cases related §. 792.

Certainly, such a watery swelling is easy to be known; and while it has not increased to a great size, there is hope of curing it by discussion, if repeated frictions be used, together with fomentations of camphorated spirits of wine, and a hydragogue purge be administered. Decoction of briony, adding thereto wine and sal ammoniac, or even the root alone bruised to a pulp, has often been of service. If these tumours

tumours are very large, and do not yield to these remedies, it is safe to open them; when, for the most part, there issues from them a pellucid fluid, somewhat viscid, like the white of an egg. To prevent a return of the complaint, the sides of the emptied bag may be so irritated, by strong, suppurating, and corrosive applications, as to suppurate and grow together. Of which hereafter, when we treat of the cure of an hydrocele.

## S E C T. MCCXXII.

**T**HE cavity of any gland may be the seat of a like disorder, which will admit of a like cure.

There is, perhaps, scarce any part of the body where like tumours may not arise. If the follicle of a gland, or one or more cells of the adipose membrane, be distended with watery serum, there is no cavity of the body, great or small, which does not exhale and re-absorb some humour, as was said §. 1216. If, therefore, by any cause, the exhalation continuing re-absorption is impeded, such a watery swelling may arise. I once saw (as I mentioned §. 796.) such a swelling of no small size, under the tongue, happily removed by puncture. I have sometimes observed such hydatides formed in the edges of the eye-lids, and in the cornea itself. A viscid lymph of this kind is frequently enough collected in the joint of the knee; which, however, if attended to in the beginning, is generally to be dissipated by suitable remedies. *La Motte* saw a tumour of this kind, formed in one night, not very painful, and in which he perceived a manifest fluctuation: however, within a few days, by the use of aromatics and wine, it was happily removed. It



is easy to deduce the cure of like swellings in various parts of the body, from what has just been said; as also from what will be mentioned hereafter, on treating of the cure of the dropsy.

## S E C T. MCCXXIII.

**A** Remarkable species of dropsy also frequently occupies the ovaries of women; and this disease is chiefly incident to barren women, and such as are in years: it is difficult to be distinguished, and scarce ever known, but from dissection. It is never cured, but often turns to an ascites.

The ovaries are situated on each side of the bottom of the womb; and being joined to the womb by a short round ligament, are lodged within the duplicature of the broad ligament, and are frequently distended by a dropical swelling. Numerous cases of this kind occur every where, in the writings of the authors and collectors of medical observations. In the bloom of life, the ovaries are plump and turgid; and many transparent vesicles bunch out from their surface, which are called the *ova*. In elderly women, they are so often decreased in size, that scarce any traces of them remain. There is, perhaps, no part of the body, which so often swells out into atheromatose, steatomatous, and dropical tumours, and in which such strange concretions have been found. Anatomists have found in the ovaries, stones, hairs, teeth, bones, and frequently large hydatides, enclosed in peculiar membranes, and sometimes of a prodigious size.

But although this disease most frequently attacks barren and elderly women, yet sometimes, it is certain, fruitful women have been subject to it in the vigour of life.

Dr. *Douglas*<sup>r</sup>, dissecting the body of a woman of twenty-seven years old, who had died the third day after her lying-in, found the whole left ovary changed into a large hydatid, which filled the whole cavity of the abdomen, compressed all the abdominal viscera, and contained above seventy pints of a viscid dark-coloured humour, almost of the consistence of a syrup. In the sack itself, which enclosed the humour, he found many small bladders of different sizes, distinct from each other, and containing a pellucid viscid humour, like mucilage of quince-seeds, and coagulating with heat like the white of an egg.

This tumour had grown to so prodigious a size, in three years time; and took its first rise from a violent blow on the left side of the abdomen, not long after the birth of her first child: she felt from this blow a great pain, which, however, went off in three days time: two months afterwards, she felt some slight pains in the hypogastric region, on the left side, which also began to swell: the pains increased more and more, till she became pregnant: and during the time of her pregnancy she felt no unusual uneasiness, only the abdomen was more swelled than is common; and the swelling scarcely subsided at all after delivery. In a year after, she was with child again; and about the middle of her pregnancy, her legs suddenly began to swell; and if they were rubbed, a considerable quantity of water came from them, as also from the skin of the abdomen, especially if the pustulæ on the skin were scratched. There came on then a difficulty of breathing, and a palpitation of the heart; and she could not sleep, except in an erect posture, for fear of suffocation. However, she bore a living child; but an extreme weakness and difficulty of breathing succeeded the delivery, and she died on the third day. But as each

<sup>r</sup> Philosophical Transactions, N<sup>o</sup> 308. pag. 2317. and Philosophical Transactions, abridg'd, Tom. V. pag. 290.



each cavity of the thorax contained a large quantity of reddish water, and the pericardium was full of a greenish liquor, Dr. *Douglas* thought this might be the chief cause of her death; and that otherwise she might have lived many years, the other abdominal viscera being in a sound state.

We read<sup>s</sup> of a virgin, who was attacked with this disease at thirty, and lived to be eighty-eight years old: on dissection, the swelling was found to fill all the abdomen, except the pelvis.

Whether is the fluid, contained in a dropfical swelling of the ovary, more frequently found of a dark dirty colour, than in an ascites? Certainly, many observations seem to shew this. In the case just mentioned, there was found a viscid dark-coloured liquor. In another like case, after death, forty-two pints of a fluid, without any smell, which resembled coffee in colour and consistence<sup>t</sup>. *Antonio Benevoli*<sup>u</sup>, shewing his scholars the operation of the paracentesis on two dead bodies, evacuated from one of them, a large quantity of water tolerably clear; from the other issued a dark-coloured liquor: whereat being surprized, he immediately dissected the abdomen, and at first sight, thought all the contents were putrified: he caused the cavity to be washed out with clean water; and then he saw floating in the water, a large hollow membrane, of a black colour, under which lay concealed the intestines, and the other abdominal viscera, sound, and quite of a natural colour: after a careful examination, it appeared, that this vast bag had its origin in the left ovary: on the internal surface of this bag were also found some tumours, as big as an egg, and even larger. The observations of Professor *Morand*<sup>w</sup> also evince, that

VOL. XII. U these

<sup>s</sup> Memoires de L'Academie de Chirurgie, Tom. II. pag. 458.  
<sup>t</sup> Academ. des Sciences L'An. 1739. Hist. pag. 22. <sup>u</sup> Dissertazioni, &c. pag. 113, 114. <sup>w</sup> Academie de Chirurgie, Tom. II. pag. 458.

these tumours contain a matter like lees, and some time of a gelatinous consistence, as I have also seen.

Sometimes such dropfical swellings grow to a vast size, so as to fill the whole cavity of the abdomen, and then they cannot easily be distinguished from an ascites: but a dropfy of the ovary may more easily be known in its beginning, from its seat in one or other side of the epigastric region, and from the bounds circumscribed to the tumour. An obtuse pain, and a kind of weight, are also frequently perceived in the place affected\*, in the beginning of the disease. Women bear this complaint a long time, without any signal injury to their health: they conceive, bear children, and the functions of the rest of the abdominal viscera, remain nearly intire, as they are not soaked in water, as in an ascites; but only suffer a pressure, from the distension of the incumbered sack of the tumour. The urine comes away pretty free, and in the usual quantity; which is seldom the case in an ascites. To these symptoms, a celebrated physician† adds, a swelling of the leg on the same side with the other tumour, and frequent oozing of water through the pores: nay, he almost reckons this a pathognomonic symptom; and indeed, in the case above recited, Dr. Douglas observed the same thing.

Nevertheless, the true seat of the dropfy may still be doubtful; for the same disorder has been observed in the fallopian tubes; under which complaint an unhappy virgin laboured, in whose body, although the abdomen was amazingly distended, no water was found in the cavity of the belly; but 124 pints of limpid water, of a brackish taste, were contained in the right fallopian tube‡: the ovary was of middling size only, and half of it putrified. N

\* Ibidem, pag. 457. † Targioni Tozzette Observat. Medicæ pag. 37, 75. ‡ Bonet. Sepulcret. Anatom. Tom. 1. pag. 491.



ne certainly could distinguish, in the beginning of such a disorder, whether the swellings were in the ovary, or in the fallopian tube; however, there is no great diversity in the cure, which soever of these be the seat of the dropsy. As the membranes of such dropfical sack have often been found very thick, it is more difficult to perceive the fluctuation of the water, than if it were contained in the cavity of the abdomen.

It is evident, that a dropfical tumour of the ovary may, by bursting its enclosing membranes, let out the contained water into the cavity of the abdomen, and thus be converted into an ascites; although this seems rarely to happen, as we read so many instances of prodigious watery tumours in the ovaries, found unbroken on dissection. A like method of cure may be pursued, as will be mentioned hereafter in the general treatment of a dropsy; but it is obvious, that the cure will be difficult, as the disorder often lies concealed, in the beginning of the disease, a long time before it can be well distinguished; and is scarce ever certainly known, till the swelling is grown to a considerable size. If now it should be true, as *Wuyfch*<sup>a</sup> affirms, that these dropfies of the ovary are mostly, if not always, a dilated ova, they must most prodigiously exceed their natural magnitude, before the disease can be known: and as the principal hope of curing a dropsy, is built on this, that the collected lymph, being re-absorbed by the veins, may be expelled from the body by urine, stool, or sweat, it is easy to see, that such re-absorption can scarce be expected, when the enclosing membranes are so much dilated, and the veins, dispersed through them, entirely compressed by the distending water: hence such tumours proceed to grow, till sometimes they arrive at an almost incredible size. Add to this, that sometimes a schirrus accompanies this complaint, which in-

<sup>a</sup> Observat. Anatom. Chirurg. Observ. 17. pag. 17.

creases the difficulty of the cure<sup>b</sup>. In one instance each ovary was found scirrhus, so that one weighed fifteen, and the other twelve pounds; their internal substance appeared, as it were, glandular, and contained several hydatides of various sizes. Sometimes a gelatinous substance is contained in this kind of tumour<sup>c</sup>, which cannot be discharged, by means of the trocar; whence it has been necessary to dilate the wound, that this thick fluid might find a passage; but putrefaction is soon consequent on the accession of air; and part of the contained fluid, escaping into the abdomen, is corrupted, and occasions death. A case is related, in which, although at different times, sixty-seven pints of gelatinous fluid were let out, yet a considerable quantity of it was found in the cavity of the abdomen after death.

Is, therefore, a dropsy of the ovaries to be accounted an absolutely incurable disease? Certainly we read of an instance<sup>d</sup>, where all the symptoms seem to shew, that the left ovary was the seat of a dropsy; and in thirteen years time swelled prodigiously. As the tumour swelled to a point, Dr. *Houltoun* complied with the intreaties of the unhappy woman, and inflicted a wound at the top of the swelling, of an inch in length: as nothing issued from it, he dilated the wound; a viscid gelatinous substance came out first, and afterwards, a vast quantity of such matter, as is wont to be contained in a steatoma, or atheroma; together with several hydatides of several sizes, some of which were bigger than an orange. All the contents being discharged, he closed the wound by suture; and pursuing a proper method of cure, this woman was quite recovered.

But as sometimes such tumours do not adhere by a very thick root to the ovary, and have been found not at all adhering to the rest of the viscera

<sup>b</sup> Academie de Chirurgie, Tom. II. pag. 456.  
pag. 452.

<sup>c</sup> Ibid.  
<sup>d</sup> Philosophical Transactions, N<sup>o</sup> 381. Sect. 3.



very famous surgeons have begun to think of extirpating the diseased ovary. It is certain, that the ovary may be cut out of animals, without loss of life: and we read, that this has been attempted on the human species, and that once this fell out by accident<sup>e</sup>. When the disease has not got to a great height, and while there is but little apprehension of the tumours adhering to the neighbouring parts, it does not seem altogether impossible, that such an operation might be attempted with some hopes of success.

In the mean time it is certain, that the paracentesis is equally safe for a dropsy of the ovary, as for an ascites: and by this means, life at least may be prolonged for many years, and the patient's suffering relieved, although perfect recovery should not be obtained. Professor *Morand*<sup>f</sup> asserts, that he several times performed this operation on a lady of quality, who suffered so little from it, that she frequently went into the country the day after the operation, although generally eighteen pints of water were drawn out: nor did she die at last of a dropsy, but of some other disease.

## S E C T. MCCXXIV.

**S**O great a quantity of water is also sometimes collected in the cavity of the womb itself, (its internal orifice being quite closed) that the whole belly seems to swell, as in an ascites: this disease is also difficult to be distinguished, on account of the symptoms resembling those of pregnancy. It is to be cured, by relaxing the mouth of the womb, by fomentations, steams, and the application of uterine medicines.

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<sup>e</sup> Academ. de Chirurg. Tom. II. pag. 460. <sup>f</sup> Ibid. pag. 458.

As the womb is hollow, the mouths of its arteries exhale a subtle lymph, which may either be discharged by the mouth of the womb, or if that be closed so as to refuse a passage to it, it will be re-absorbed by the veins, which are numerous here, and sufficiently open. Of *Tabarrini*, a celebrated anatomist, we read<sup>3</sup>, that, *dum inflaret acrem in alterum arteriæ vel vene hypogastricæ ramum aliis singulis utrimque vinculo adstrictis vidit communicationem seu anastomosis, quam invicem agunt arteriæ itidemque venæ matricis alterius lateris cum aliis similibus partis oppositæ, & eum ipsis spermatices*; “ while he was blowing air into  
 “ any one of the hypogastric arteries or veins, all of  
 “ the rest on either side being bound up, he saw the  
 “ anastomosis or mutual communication, which the  
 “ veins and arteries on one side of the womb,  
 “ maintain with the respective corresponding vessels  
 “ of the other side, and also with the spermatic  
 “ vessels themselves:” and not only this, but he saw, that the uterus itself, and the vagina, were inflated by this means: and, on the other hand, he saw, that when air was blown through the orifice of the vagina, the veins belonging to the uterus, vagina, and ovary, were inflated and swelled up with air; so that there is a very free entrance of the exhaled fluid into the veins, and consequently re-absorption is easy here. Besides, if serum be collected in the cavity of the womb, it may easily flow out by the mouth of the womb, unless that be closed, or the vagina preternaturally concreted; which, as it can but rarely happen, we see the reason why a uterine dropsy is but seldom known.

But as the mouth of the womb is closed, if any lymph be then collected in the cavity of the womb, an outlet is denied to it. It is indeed true, that when the fœtus is grown to any considerable bulk, the chorion adheres every where to the internal surface of the womb, by the cellular membrane, and fills

<sup>3</sup> Observat. Anatom. N<sup>o</sup> 38. pag. 77.



fills the whole cavity: but in the beginning of pregnancy, the foetus, with its membranes and their inclosed fluids, is much less than the womb, and during this time lymph may be collected there; besides, after that the outward surface of the chorion touches the inside of the womb, and every where adheres to it, the cellular membrane, which connects them, may break in some part, or by some means be detached from the womb; and then the extravasated fluid may be collected between the outer surface of the chorion, and the inner surface of the womb.

In the mean time, it is easy to see, that in order to form a dropsy of the womb, the mouth of the womb must be closed, or the sides of the vagina stick together: hence we may consider a dropsy of the womb, as affecting pregnant women, or them who are not pregnant.

*Hildanus*<sup>b</sup> observed a dropsy of the womb in his own wife, while she was pregnant. From the very beginning of her pregnancy, she had been weaker than was usual with her formerly in the same circumstance, and her belly, in the course of it, swelled to so monstrous a size, that every one thought she would bring forth several children: six weeks before delivery, her legs and feet swelled, as is common in dropical persons; she endured grievous sufferings for a long time; and at last, after having had labour pains for two days, the pain suddenly increasing, the mouth of the womb opened, and eighteen pints of quite clear water, without any tincture of blood, flowed out: after she had rested half an hour, and been strengthened by a cordial, the waters, which properly belong to the membranes enclosing the foetus, came away, to the quantity of nine pints, and she bore a boy in perfect health, and stronger than the children she had borne before, to which she gave suck and reared happily; and she herself was well in a month's time. She was afterwards preg-

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<sup>b</sup> Oper. omn. Observat. Centur. 2. pag. 128, 129.

nant again, and in tolerable good health all the time of her pregnancy. It seems very probable, that those first eighteen pints of clear water were preternaturally collected, and not enclosed in the membranes which involve the foetus, as the waters contained in them are seldom found so transparent. *Mauriceau*<sup>1</sup> found in a woman, who had discharged upwards of three pints of water from the womb a month before delivery, the membranes, which involve the foetus, intire, and was obliged to break them, in order to free the dead child.

It seems, however, very probable, that the fluid naturally contained in the amnion, may sometimes be increased to a very unusual quantity: thus it is often observed, that the bellies of pregnant women are greatly swelled, so that they imagine they shall bring forth more children than one; whereas, when their time is out, one child only is born, and that not of an unusual size, but a vast quantity of water comes away when the membranes are burst: such children are often weaker than others, and, after languishing a short time, die. A woman who had had several children, when she was eight months gone with child, was exceeding big, and the size of the abdomen increased considerably in the last week of pregnancy: when the membranes burst, about fifty pints of water came away; after which the man-midwife delivered her of twins, one of which was dead, and the other lived but sixty-four hours: neither had more than half the bulk of a child born at eight months end, but the mother was thought out of all danger in twelve days after the delivery<sup>k</sup>.

This disease was known to *Hippocrates*, and he makes mention of it in several places<sup>l</sup>, and says, that

<sup>1</sup> *Traité des Maladies des Femmes grosses*, Tom. I. pag. 178.  
<sup>k</sup> *Essays and Observations, Physical and Literary*, Vol. II. pag. 342.  
<sup>l</sup> *De Natura Muliebri*, Cap. 11. *Charter*. Tom. VII. pag. 682. and Cap. xxxvi. *Ibidem*, pag. 707.



that the woman will recover, if she goes out her time; *expurgantur enim cum ipso puerperii purgamento, & quæ prius in ea suberant*; “for that which was in her before is purged off, together with the usual childbed discharge.” The instances above recited confirm the judgment of *Hippocrates*.

But it sometimes happens, that a dropsy of the womb ensues upon a miscarriage; especially if the placenta has been left behind, which has often been observed to degenerate into a mass of hydatides.

*Ruyfch*<sup>m</sup> observed, that the abdomen in some women was distended to a vast size from this cause; which distension was accompanied with a great difficulty of breathing, an œdema of the feet, a loss of appetite, an oppression on the præcordian, fainting, and paleness. In another place<sup>n</sup> place he tells us, he has often found, that when the placenta was left in the womb, it degenerated into limpid hydatides, either in whole or in part. *Tulpius*<sup>o</sup> observed the like appearances in a woman, who having been for some time afflicted with an inordinate flux of the menses, at last brought forth a mass, containing innumerable bladders, some filled with a saffron-coloured water, and some only with air: these were not, indeed, discharged all at once, but at separate times, so as that all together they would easily have filled a common water-pail, which would contain sixteen pints of water, or more: after these were discharged, so much blood and water came away, that she fainted several times. He saw a case of the like kind in another woman, who, as well as the first, soon recovered her former health: nor did the womb appear to be injured, as they both happily brought forth children. *Hippocrates*<sup>p</sup> also seems to have known this to be sometimes the cause of a dropsy of the womb; for thus he speaks, *si hydrops in utero oriatur menses pauciores ac deteriores fiunt*,

<sup>m</sup> Observat. Anatom. Chirurg. N<sup>o</sup> 28. pag. 25.      <sup>n</sup> Ibidem, Observat. 33. pag. 32.      <sup>o</sup> Observat. Med. Lib. III. Cap. xxii. pag. 238.      <sup>p</sup> De Natura Muliebri, Cap. 11. Charter Tom. VII. pag. 682.

*fiunt, deinde derepente deficiunt, venter intumescit, mammae siccae evadunt & in reliquis male habet, sibi-que utero gestare videtur, sed & in uterorum osculo significat, tangentibus enim gracile apparet & febris & aqua ipsam corripit, quoque longius tempus pro cesserit, dolorimum ventrem, lumbos & ilia detinet, hic morbus ex abortu maxime oritur & ex aliis etiam accidit; “ if “ a dropfy be formed in the womb, the menses de- “ crease in quantity, and are worse in quality; after- “ wards, they suddenly cease, the belly swells, the “ breasts grow dry, and the woman is otherwise in- “ disposed, and feels to herself to be with child; “ but the mouth of the womb affords a symptom in “ this case, for it seems slender if touched: a fever “ and dropfy afflict the patient, and in process of “ time, a pain is felt in the lower belly, the loins “ and flanks. This disease principally arises from “ abortion, although it sometimes springs from other “ causes.”* He has a like observation<sup>a</sup> also in another passage.

But experience shews, that water is sometimes collected in the womb, when it is not pregnant; and that in a very great quantity, if the mouth of the womb be obstructed, or concreted, so as not to afford an issue for the water: and as many of the signs of pregnancy are the consequence of the distension of the womb, it is no wonder that the womb, being distended by a dropfy, should sometimes deceive even skilful persons, with a false shew of pregnancy. Sometimes also, water collected in the womb, is discharged from thence at stated times, the mouth of the womb being opened, and is collected afresh. Thus we read in *Fernelius*<sup>r</sup>, *Mulier quædam hoc hydrope correpta, quoties appetebat menstrua purgatio, omnem aquarum colluviem ex utero per cervicem profunderet, pelvesquæ sex aut octo repleret aquâ ferventissimâ dum*

<sup>a</sup> De Natura Muliebri, Cap. xxxvi. Charter. Tom. VII. pag. 707. & De Nat. Mul. Cap. LIX. ibidem, pag. 761. <sup>r</sup> Pathol. Lib. VI. Cap. xv. Part 2. pag. 196.



*tum venter totus subsideret. Mox deinde menses in se-*  
*quebantur ex naturæ præscripto. Collecta proximo men-*  
*se par colluvies stato de intempore profluebat. Hæc*  
*tandem persanata uterum gestavit beneque vitalem pepe-*  
*rit fœtum;* “ a certain woman, who had this disease,  
 “ always on the approach of her courses discharged  
 “ all the collected water through the neck of the  
 “ womb, so as to fill six or eight basons with a very  
 “ hot water; the menses then followed regularly.  
 “ An equal quantity of water was collected in the  
 “ succeeding month, and at the stated time was dis-  
 “ charged, as before. This woman was afterwards  
 “ perfectly cured, became pregnant, and bore a  
 “ living child.” Every day, for some months, a very  
 impid water issued by drops from the womb of a lady  
 of quality of *Berlin*, in such a quantity, as in twenty-  
 four hours sometimes to amount to a pint; at last  
 she died, quite wasted, of a fever. On dissection,  
 the uterus was found in great part schirrous, and the  
 vessels of it, in part stuffed up with polypusses;  
 but in both the instances we have mentioned, the  
 mouth of the womb being open, left an issue for the  
 collected lymph. But as it appears also, from these  
 observations, that a very large quantity of water  
 may be collected in a little time, in the cavity of the  
 womb, if the mouth, being any ways closed, hinders  
 a discharge; we may the less wonder, that *Vesalius*<sup>1</sup>  
 should assert, that he saw in the womb of a dead  
 body, above 180 pints of serous watery matter; *nul-*  
*libi interim circum intestina aqua præsentē aut laxo in*  
*manibus aut pedibus tumore, aut etiam viscerum aut al-*  
*terius cujusdam organi, sese alicquin offerente vitio: præ-*  
*terquam quod magnus ille uterus, cujus fundi os miris*  
*modis occaluerat, tota anteriori suâ sede peritonæo erat*  
*conatus, & dextri testis glandulæ miris modis non secus*  
*excreverant, quam si novem decemve anserum, aut stru-*  
*thio-camelorum potius, ova uni inessent membranæ, sin-*  
gula

<sup>1</sup> Frid. Hoffm. Med. Rat. System. Tom. III. pag. 160.  
 De Hum. Corp. Fabr. Lib. V. Cap. ix. Tom. I. pag. 438.

*gula humore albuminis ovorum non absimili, aut paulo crassiore oppleta*; “no water in the mean time being found about the intestines, or any lax tumour in the hands or feet; nor were any of the viscera, or of any other organ, unsound; except that this prodigious womb, whose bottom was grown wonderfully callous, adhered to the peritonæum before, and the glands of the right ovary were so amazingly increased in size, that it seemed as if nine or ten eggs of geese, or rather of ostriches, were inclosed in one membrane, each of which were stuffed with a liquid like the white of an egg, or a little thicker.” More instances might be brought of a dropsy of the womb, but I think these are sufficient to shew, that this disease takes place, both in pregnant wombs and in those which are not pregnant.

*Hippocrates* <sup>u</sup> himself acknowledges the difficulty of distinguishing this disease, as women sometimes are ignorant of their being affected with it; and although they perceive a swelling beginning in the hypogastric region, believe themselves pregnant; or, if they do not imagine this, yet conceal the complaint from modesty. *Hippocrates* tells us also that even physicians may mistake, from not enquiring carefully enough into the cause of the disorder. Hereafter, when we treat of the diseases of pregnant women, it will appear that the symptoms of pregnancy are not always certain, and that the most skilful physicians have sometimes been deceived herein. *Hippocrates* <sup>w</sup> speaks thus of the symptoms of a dropsy of the womb; *venter ei magnus erit, & pondus tamquam prægnanti inerit, & in ejus ventre velut puer moveri videbatur, uteris nimirum aquâ oppletis, & aquâ agitata. Alias enim atque alias in iis aquâ tanquam in utero fluctuat, & pars sub umbilico ad contactum dolet, claviculæ, thorax, facies atque oculi attenuantur & papillæ attolluntur*; “the woman’s belly will swell, and she

“ will

<sup>u</sup> De Mulier. Morb. Lib. I. Cap. xxxi. Charter Tom. VII. pag. 763.

<sup>w</sup> Ibid.



“ will feel a weight in it as if she were pregnant, and  
“ will think she feels the child move in her womb,  
“ from the agitation of the water which fills it. For  
“ from time to time the water fluctuates as in a bladder,  
“ and she feels a pain in the parts under the  
“ navel; on being touched there, the clavicles, the  
“ thorax, the face, and the eyes, are extenuated,  
“ and the nipples are raised.” Modern writers \*  
have added to these symptoms some others; and have  
noted, that this disease is more incident to barren women  
than to such as have borne children, and that the  
mouth of the womb is almost always found smaller  
and slenderer. *Hippocrates* says, that the nipples are  
raised; the moderns say the breasts are flatter and  
soft, and do not swell with milk as in pregnant  
women.

However, all things well considered, it is sufficiently evident that great skill and caution are necessary, in order to determine any thing in this case. For the womb, distended by the collected water, rises gradually as in pregnancy; nor can the fluctuation of the water be well perceivable, as the womb is always full, and is therefore distended by the increasing quantity of water; because its natural capacity is filled, and cannot receive more without stretching. Sometimes women in a dropsy of the womb are firmly persuaded they are with child, and think they perceive the motion of the foetus in the womb; which sensation may arise from flatulences wandering over the intestines, and successively distending different parts of the abdomen. A barren woman † was firmly persuaded she was pregnant, as were also the midwife, and several other women; at ten months end a quantity of water, together with flatulences, issued from the womb, and the swelling of the abdomen subsided: for not water only is collected in the cavity of the womb, but wind also; which, if the mouth of the womb be

\* Mauriceau *Traité des maladies des femmes grosses*, Tom. I.  
pag. 177.    † Ibid. pag. 74.

be close shut, will produce the appearance of a tympany. *Hippocrates*<sup>2</sup> uses this term of an inflation in the womb; and in another place he tells us<sup>a</sup>, *uteri, a ventre flatum suppedit ante, spiritu distenduntur & intumescunt, tunc mulieres se concepisse existiment*; “when the womb is inflated and distended with air it swells, and women think they have conceived.”

It is known that air can freely come into the cavity of the womb, especially when the mouth of the womb is open after delivery: if, after this, the mouth be stopped up by any cause, the included air, expanding with the heat of the body, may distend the womb; but elastic air also is thrown off from extravasated putrifying blood, which may produce an inflation of the womb. *Aetius*<sup>b</sup> has well recommended this; he says, *vulva interdum a partu refrigerata spiritu impleri solet, sive os ejus claudatur, sive grumescente sanguine obstruatur*; “the womb sometimes growing cold after delivery is filled with air, whether the mouth thereof closes up, or be stopped up with grumous blood.” Then he adds, *nonnunquam spiritus efflatio per pudendum muliebri erumpit, ut ab aegris percipiatur*; “sometimes the flatus breaks forth from the pudendum, so as to be perceived by the patients.” When there is an inflammation of the womb in child-bed women, or when its mouth is obstructed by clots of blood, the abdomen is inflated, not without danger of life; and then most of the symptoms appear which *Aetius* enumerates: *affectum sequitur pectinis totiusque suminis tanquam tympanitæ hydropis tumefactio, doloresque punctio- nis sensum inferentes, qui usque ad stomachum & sensum transversum perveniunt, ac nihilominus utrimque in latere extenduntur, superque alteri inguini, interdum utri- que, interdum & umbilico lumbisque & pectini, dolor communicatur cui caput quoque assentitur*; “a disorder

<sup>a</sup> De Natur. Muliebri, Cap. xli. Charter. Tom. VII. pag. 709.

<sup>a</sup> De Natura Pueri, Cap. x. Charter. Tom. V. pag. 329.

<sup>b</sup> De Re Medica, Lib. XVI. Cap. lxxx. pag. 159.



der of the pudendum and of the whole belly follows, like the swelling of a tympany, together with pricking pains, which reach to the stomach and diaphragm; and are besides felt in each flank, and on one or both sides of the groin: sometimes the pain is communicated to the navel, loins, and pudendum, and even the head is affected by a sympathy of parts." For the cure of this disease he advises, that after long using a bath of emollients mixed with carminatives and uterines, *obstetrix digitum in sinum pudoris imponens, grumum sensim dissolvat & educat* <sup>c</sup>, "the midwife applying her finger to the part affected, should gradually break the clot of blood and draw it out."

For whether water or flatulences are contained in the womb, the principal of cure is in procuring an issue for either, by opening the mouth of the womb; in which, as we may generally hope to succeed, *Aretæus* has pronounced a dropsy of the womb to be more easy of cure than other dropsies: *nam si ejus osculam a priori conclusione hiare ceperit, humorem quidem si habeat effundit, si spiritum efflat*; "for if the mouth of the womb which was closed opens, it pours forth the water, or lets out the air, if either were inclosed in the womb." Baths, fomentations, steams, liniments, &c. therefore, made of the most emollient herbs, are used in these cases; such as were recommended §. 35. 3. and are to be met with in the *Materia Medica* in the article corresponding thereto. After these, or at the same time, what are called uterine remedies, which act by stimulating, and are enumerated in the article of our author's *Materia Medica*, corresponding to §. 1291. 4. are advisable: those should be chosen which agree best to the age, temperament, &c. of the patient.

*Hippocrates* <sup>d</sup> recommended a similar method, for he advised warm lotions and tepid fomentations, and then

<sup>c</sup> De caus. & sign. morb. diut. Lib. II. Cap. 1. pag. 51. <sup>d</sup> De Natura Muliebri, Cap. 11. Charter. Tom. VII. pag. 682.

then gave a purge; and besides, stimulated the mouth of the womb by a fomentation, which was prepared of ox-dung: afterwards he used a compound medicine, in which cantharides were an ingredient; and after an interval of three days, he used another medicine into which gall entered. He advises like remedies in another place<sup>e</sup>; and after using lotions and fomentations, he orders sow-bread rubbed in with honey and spread on a linen rag, to be applied to the mouth of the womb, and shavings of cypress soaked in water. *Idque quo plus mordet aut vellicat, brevior aut longior tempore faciendum, & paratum specillum stanneum, digitumque eodem intromitto;* “ according to the degree in which this “ application irritates and stimulates, it is to be continued for a longer or shorter time; and a tin “ probe, or the finger smeared with a preparation “ of this kind, may be thrust up these parts:” for while the mouth of the womb is thus stimulated, there are hopes that the mouth of it, having been previously relaxed and softened, the womb by its contracting itself may so dilate the mouth, that the contained water may be expelled. When, after delivery, a clot of blood begins to stick in the mouth of the womb, a fresh tenesmus arises, which does not cease till the grievance be removed. Hereafter, when we shall treat of a difficult labour, it will appear, that midwives by lightly touching and tickling the mouth of the womb, renew the labour-pains when they grow languid; and even can perceive the first traces of a beginning pang from the mouth of the womb itself, when they touch it in women in labour.

The whole hope of cure therefore consists herein, that the mouth of the womb being open, those things which are confined in its cavity may come out. But if the mouth of the womb be so stopped up that it

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<sup>e</sup> De Mulier. Morb. Lib. I. Cap. LX. Charter. Tom. VII. pag. 262.



can by no art be opened, as happened in the surprising case quoted from *Vesalius* a little above, then the womb will be distended to a prodigious size. Perhaps in these circumstances it might be possible by the paracentesis to relieve the disorder, at least in some measure. Indeed to this end the substance of the womb must be pierced; but there does not seem to be very great danger attending this, as in the *Cæsarean* operation a large wound is made in the womb, and yet it appears that this has been healed up. Nor will the water left behind, or collected anew after the canula is pulled out, easily pass through the perforation in the abdomen, as this small wound contracts immediately in such a manner as almost to close; and the uterus, when greatly distended, frequently adheres to the peritonæum, as the observation of *Vesalius* confirms.

## S E C T. MCCXXV.

**W**HENEVER the same lymph stagnates, or is extravasated through the whole habit of the subcutaneous fat, that kind of dropsy is formed which is called ἀνὰ σάρκα, ὑπὸ σάρκα, λευκοφλεγματία: which also takes place in the abdomen and in the scrotum.

On another occasion, in treating of an inflammation, §. 374. mention was made of the adipose membrane; and we then noted, that this membrane was dispersed all over the body, and invested all the muscles, tendons, &c. also their fibres; and that almost all the vessels were interwoven with such a cellular coat, and that it even constituted in part the very substance of the vessels and viscera. The structure of this membrane has been exceedingly well described<sup>f</sup>; and at the same time it has been demonstrated,

<sup>f</sup> Abrah. Kauu Perspir. dicta Hippocr. pag. 326, & seq.

strated, that a fat oil is secreted from the blood in the cells of this membrane; not indeed by peculiar pinguiferous vessels, but small branches proceed from the sides of the minute sanguiferous arteries differing only from these arteries by being of less dimensions; from the extremities of which this oil is deposited in the cells of this membrane, and being again re-absorbed by the veins is restored to the blood. If more fat is secreted into the cellular membrane than is taken up again by the absorbing veins, the body is overcharged with fat; if the deposited fat is all re-absorbed by violent motion, heat, or fever, sudden emaciation frequently ensues, as is often observed after persons have undergone acute diseases. When therefore water abounds in the body, or the watery parts of the blood are not close enough combined with the thicker parts of the blood, the water is easily transmitted to the cellular membrane; and if it be not re-absorbed in equal quantity by the veins, it will distend the cellular tunic and cause the whole habit to swell. Thus Dr. *Hales* <sup>g</sup> produces an artificial dropsy, by infusing warm water into the arteries of animals through a tube of such a height that the pressure of the column of water was nearly equal to the force with which the heart propels the blood through the vessels. But if water be injected even by the veins, the whole cellular membrane swells as in a dropsy; and even sooner than when the injection is attempted by the arteries <sup>h</sup>. For the reason a dropsy of the adipose membrane, or of the cellular membrane, which envelopes all the muscles and fills up their interstices, is called ἀνὰ σάρκα, ἢ πρὸ σάρκα, an anasarca; and because the cellular membrane when swelled up, raises up the skin from the subjacent parts, hence it has also been called *aggrævus intercus*; and hence *Quintus Serenus* speaks thus of the dropsy:

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<sup>g</sup> *Hæmæstatics*, Exper. XIV. pag. 114. <sup>h</sup> *Abrah. Kaan Persi* rat. dist. Hippocr. pag. 335.



*Corrupti jecoris vitio vel splenis acervo  
Crescit hydrops, vel cum siccata febre medullæ  
Atque avidæ fauces gelidum traxere liquorem;  
Tum lymphæ intercus vitio gliscente tumescit,  
Secernens miseram proprio de viscere pellem.*

“ The dropsy often arises from some disease in the liver, or an obstruction in the spleen, or from too greedily swallowing cold liquors in a fever; then the lymph swells the body, and raises up the skin from the bowels, which it should cover.”

The watery serum therefore, collected in the cellular membrane, may be diffused over the whole habit; and particular parts may swell from the same cause. Thus frequently only the feet, legs, and thighs swell in an anasarca; and indeed, this disease generally begins in the lower parts, as the water collected in the cellular membrane tends downwards by its own weight, and makes the feet swell towards evening; which swelling, by the warmth and horizontal posture of the body in bed, disappears, returning again; when by an erect posture the lower limbs are in dependent position, especially if the ascent of the venous blood be not assisted by muscular motion.

It is to be noted, that an anasarca may have its seat both about the abdomen and about the scrotum; and cause sometimes the cellular membrane of these parts which is easily distended, may swell in such a manner, as to produce the appearance of an ascites, or of a dropsy of the testicles, which diseases the anasarca sometimes accompanies, as will be shewn hereafter.

This disease is usually called also λευκοφλεγματία; but perhaps this appellation is less accurate. Herefore, §. 72. when we treated of diseases arising from spontaneous viscidities, it was observed, that the blood sometimes degenerates into such a cacochymia as to lose its redness and consistence, and becomes lighter,

and acquires a disposition more lax than is natural to it, and approaches to a cold mucus: this the ancients called λεύκον φλέγμα, white phlegm. But when the blood (its crasis being dissolved to a watery thinness) distends the parts under the skin with a watery humour, the disease is then rather to be called anasarca. In a leucophlegmatia therefore, a mucous viscosity rather prevails, which being diffused over the habit of the body, is more equally dispersed everywhere. In an anasarca there is a watery thinness of the fluids, and the watery swelling shews itself first in the lower parts of the body, and afterwards ascends gradually. It was also then noted, that the ancient physicians had observed a leucophlegmatia pass into a dropsy, when the viscid mucus gradually dissolved into a watery thinness. *Celsus*<sup>i</sup> indeed distinguished the dropsy into three kinds, of which he calls the second λεύκοφλεγματιαν, or ὑπὸ τὴν σάρκα, which disease he says the following things are observable: *modo corpus inæquale est, tumoribus aliter aliterque, per totum id orientibus*; “the body is sometimes not equally affected by this disease all over, but swellings in this or that particular part, which description rather corresponds with an anasarca than with a leucophlegmatia, in which the whole habit of the body uses to swell. *Hippocrates*<sup>k</sup>, after describing φλέγμα λεύκον, adds what follows; *si igitur curatus fuerit inchoante morbo, convalescit; sin minus hydropem transit morbus, & hominem perimit*; “this disease be subdued in the beginning the patient does well; else the disease turns to a dropsy, and he dies:” and he tells us soon after that the flesh dissolves, is corrupted, and generates water<sup>l</sup>. Now we know that the ancients called the fat covering the external muscles, flesh; and the flesh, tunic; which is also fully confirmed by another passage of *Hippocrates*

<sup>i</sup> Lib. III. Cap. xxi. pag. 160.  
 Charter. Tom. VII. pag. 625.

<sup>k</sup> De Affect. Cap. vi.  
<sup>l</sup> Ibidem, Cap. vi. pag. 625.



ates<sup>m</sup>; *pituita in hydropem maximè hoc modo deveni-*  
*ur colliquatur pinguedo, & a pituitæ ardore aqua fit;*  
 pituitous matter produces a dropsy principally in  
 this manner; the fat liquifies, and from the heat  
 of the pituitous matter becomes water:" he says  
 moreover, that a cure can scarcely be hoped if all  
 the fat is wasted. *Aretæus*<sup>n</sup> distinguishes these two  
 diseases: *si omne corpus intumescat, si ex alba crassa & fri-*  
*da pituita est, φλεγματίας ei nomen est; si in humorem san-*  
*guineum, aquosum, tenuem, carnes liquatæ fuerint, ὁδρῶς*  
*ἢ ἀσάρκα generatur;* "when the whole body swells,  
 if the swelling proceeds from a white, thick, and  
 cold phlegm, this is called a leucophlegmatia; if  
 the flesh (or fat) be dissolved to a sanguineous, wa-  
 tery, thin fluid, an anasarca is produced."

It is indeed worth while to distinguish these two  
 diseases from each other, as they frequently require a  
 different treatment. A leucophlegmatic virgin is  
 often cured by corroborating remedies without eva-  
 cuations, which does not always hold good in a drop-  
 sy. They are thus chiefly to be distinguished: in a  
 leucophlegmatia the whole habit seems soft, doughy,  
 and cold; in an anasarca the swelling generally be-  
 gins by the feet, ascending gradually; and at the  
 same time the parts affected with this dropsy, are  
 more swelled than the rest of the body; whereas in  
 a leucophlegmatia the whole body appears tumid,  
 relaxed, and pale. *Fernelius*<sup>o</sup> accounted this a pa-  
 thognomonic symptom; his words are, *banc (ana-*  
*sarcam) a phlegmatica cachexia, sejungit sola magnitudo,*  
*quod tumidiorem habeat corporis vitiatam molem;* "the  
 magnitude of the disorder alone distinguishes the  
 anasarca from a phlegmatic cachexy; as an ana-  
 sarca swells up the whole habit of the body:" be-  
 sides, the parts which are swelled in this kind of  
 dropsy being pressed by the dropsy, they pit and rise

X 3

again

<sup>m</sup> De intern. Affectionibus, Cap. xxiii. Charter. Tom. VII.  
 pag. 655. <sup>n</sup> De caus. & sign. morb. diuturn. Lib. II. Cap. 1.  
 pag. 49. <sup>o</sup> Pathol. Lib. VI. Cap. vii. Part 2. pag. 151.

again gradually when the pressure is removed; as the cells of the adipose membrane have a communication with each other, while the fluid is squeezed out of some of the cells by pressure, it passes into others, and returns to its former place when the pressure ceases. But this cannot so easily happen in leucophlegmation, as the collected humour is more viscid, and it will be more difficult for it to pass from one cell to another. Hence also we understand why the serum, by its own weight, passes down through the cells of the cellular membrane to the lower part of the body. *Aretæus*<sup>p</sup> knew this symptom of anasarca, for he advises to press this or that part with the finger; for then, says he, *cavus locus efficitur & multum temporis cavus perseverat*; “a hollow is made, which remains hollow a long time. It is true indeed, that he reckons the pitting of the parts a sign of an ascites, if the impression remain a long time; but his remark is not quite accurate for this is observed only when an anasarca accompanies an ascites, as is sometimes the case; but an ascites is often without an anasarca, and then the abdomen is tense, nor do the integuments give way to pressure.

An anasarca may occupy the whole habit, as the cellular membrane is diffused all over the body; but then it is obvious the cure will be very difficult, as the whole blood is dissolved to a watery thinness; in which case *Hippocrates*, as was said a little before, scarce allows any room for to hope, *si omnis pinguedo perierit*, “if all the fat be wasted;” and then also *Aretæus*<sup>q</sup> pronounces the cure of the anasarca to be more difficult than that of a tympany. *Oportet enim medicum in hoc morbo totum hominem permutare, quod neque diis facile fuerit*; “the physician must change the whole man in this disease; a work which scarce the gods themselves could perform:” and that he

meant

<sup>p</sup> Loco modo citato.  
I. Cap. 1. pag. 51.

<sup>q</sup> De caus. & sign. morb. diut. Lib.



meant to apply this terrible prognostic to a dropsey of the whole habit, is evident from hence, that he presently subjoins, that sometimes a man has the dropsey only in a small part, as in the head, lungs, liver, spleen, &c.

Besides, in such a case there is reason to apprehend, that the cellular membrane may be equally distended with water in the internal parts. It was observed before, §. 1220. that such watery vomicae have been observed in the cellular substance of the lungs; and we shall see hereafter, that hydatids seem to proceed from some fault in the cellular membrane. I have seen a true anasarca of the pia mater; the cellular substance interposed between the pia and dura mater, being distended with water: at first view a viscid mucus seemed to cover the pia mater; but on piercing the arachnoid membrane with the point of a lancet, a considerable quantity of thin water flowed out, and the whole tumour subsided. The reader may also look back to what was said §. 1210. 2. on the subject of an apoplexy arising from a similar cause.

It is also plain, that an anasarca may be productive of various evils, according to the seats it occupies; not only in the internal, but also in the external parts of the body. I have seen in a dropsey of this kind, the eye-lids so swelled that they could not be separated. It frequently happens, if the anasarca possesses the scrotum, that the penis swells wonderfully, and the tumid præputium is strangely twisted, so as to occasion a difficulty, and sometimes a total suppression of urine; so that scarification is necessary, to let out the water contained in the cellular membrane of these parts. *Aretæus* has taken notice of this symptom; he says, *intumescunt testes, præputium, & totus colis, ob inæqualitatem tumoris tortuosus est*; “the testicles and præputium are swelled, and the whole

X 4

“ penis

“ penis is twisted crooked from the inequality of the  
“ tumour.”

Other things however being equal, an anasarca seems easier of cure, unless it occupy the internal parts of the body, than other kinds of dropsies, as numerous large veins run through the cellular membrane, which may re-absorb the collected serum; and besides, the stagnating fluids may be put in motion by friction, and re-absorption be promoted by this means. At the same time also a passage may be easily procured for the collected lymph, by scarification, blistering, and caustics, of which hereafter.

### S E C T. MCCXXVI.

**W**HEN this water is collected in the duplicature of the peritonæum, in the cavity of the abdomen between the peritonæum and the abdominal viscera, in the dilated cavities of the glands and vessels contained in the abdomen, the disease is called *ἀσκίτης*, an ascites; it is called *τυμπανίτης*, a tympany, if the swelling be caused by a rarified vapour arising from water, pus, ichor, or air enclosed, heated, and putrifying in this region.

When the abdominal region is considerably swelled by the collected water the disease is called *ἀσκίτης*, from its resembling a leathern sack or bottle, called in Greek *ἄσκος*, *ascos*, in which the ancients used to keep their wine. The collected water may occupy this region in three ways: either it fluctuates freely in the cavity of the abdomen, and washes the abdominal viscera on all sides; or it is lodged in dilated hollow membranes; or lastly, it is collected out of the cavity of the abdomen, and then it is supposed to lodge between the duplicature of the peritonæum.

But



But many have doubted, whether the peritonæum be really double. *Galen*<sup>s</sup> thus describes this membrane, wherein on the wounds of the abdomen he enumerates the integuments of this part; *quod vero princeps excipit, ab illis quidem vocatur peritonæum putantibus videlicet illud unum & simplex esse corpus, minimeque compositum sed non ita res habet, quum id compositum ex duobus corporibus sit, quorum utrumque & ex sanguine & nervosum est. Verum alterum eorum aponeurosis est musculorum transversorum, alterum membrana præterit velut arcana, quæ utraque verum est peritonæum*; “that which follows is called by some the peritonæum, they supposing it to be one simple body; but this is not so, for it is composed of two bodies, of which both are bloodless and sinewy; but one of them is an aponeurosis of the transverse muscles, the other membrane as thin almost as a spider’s web, which latter indeed is the true peritonæum.”

From this description it appears plainly, that *Galen* did not account the peritonæum a double membrane; but meant to say this only of that aponeurosis of the muscles, which lies upon the peritonæum. The cellular membrane seems to be interposed between this aponeurosis and the peritonæum; and that accurate anatomist *Winslow*, accounts it a part of the peritonæum<sup>t</sup>, and observes, that this cellular membrane is not every where of the same thickness, but in some places is very slender, in some scarce visible at all. At the same time he tells us, that the duplication of the peritonæum is an improper appellation. *Dr. Douglas* is of the same opinion<sup>u</sup>, and maintains that this cellular substance, placed between the peritonæum and the incumbent parts, is of the same effect; *quod gossipium aut sericei flocci in veste inter pannum exteriorem & interiorem*; “as cotton or silk stuffing between the cloth and the lining of a garment.”

He

<sup>s</sup> Method. Medendi, Lib VI. Cap. iv. Charter. Tom. X. pag. 139.  
<sup>t</sup> Exposit. Anatomique. Traité du bas Ventre, N° 28. pag. 501.  
<sup>u</sup> Descript. Periton. pag. 37.

He then confesses, that formerly, indeed, he thought that water was collected between the duplicature of the peritonæum; but that he is now fully convinced *inter peritonæum & tendines musculorum transversorum esse*, “that this happens between the peritonæum and the tendons of the transverse muscles.”

But is it, after all, certain, that the peritonæum is a single, and not a double membrane? Certainly such single membranes seldom occur. *Kaau*<sup>x</sup> has described the peritonæum the most exactly of any anatomist, and demonstrated the wonderful manner in which this membrane not only covers the internal surface of the abdomen, but also wraps up each viscus, produces the mesentery and omentum, &c. from whence he concludes, *factam esse mirabilem hanc membranam continuam at partes ordinet, simul investiat & loco, retineat stupendum in modum omni parte una & eadem; processus ubique dans, qui iterum ad partes divergentes, illas includunt nec finis nec principium revera in his est*<sup>y</sup>; “that this wonderful membrane was made continuous and extending every where, to arrange the parts, to clothe them in a wonderful manner, to keep them in a wonderful manner in their places, of one and the same texture in every part; every where sending forth processes, which, stretching to every particular part, includes them, and in which there is no end or beginning.” But the peritonæum is a vascular membrane; and the same author, who with so much industry has examined the human frame, *admirabatur naturæ apparatus dum moliretur vasorum deductiones, nunquam in superficie distribuentur, nuda sed semper inter binas lamellas membranaceas proserpent: ibi ordinantur & ibi in ordine servantur*<sup>z</sup>; “admires the apparatus of nature, in contriving the distribution of the vessels; they are never pendulous, never distributed, or uncovered on the surface; but always creeping be-  
“ tween

<sup>w</sup> Ibidem, pag. 98.  
& seq.

<sup>y</sup> Ibidem, pag. 267.

<sup>x</sup> Perspirat. dict. Hippocr. pag. 255.  
<sup>z</sup> Ibidem, pag. 290.



between two membranous folds, are there maintained in orderly arrangement." He has excellently well confirmed this, from the structure of the pericardium; which, before *Ruyfch*'s art of injection, was accounted simple, thin, pellucid membrane; but after successful injections, it has appeared, that numerous vessels are distributed in the cellular substance. Between the double membrane, numerous hydatids have been found, which can scarce be conceived, unless this membrane were double.

If, besides, we consider, that the peritonæum is sometimes wonderfully altered, so as to be much thickened, and to be capable of being divided into several lamina, this opinion will be more and more confirmed: but as most of the rest consists of two lamellæ, which is natural indeed, by yet by diseases may be separated, and thus form a cavity, in which watery serum may be collected. In hernias, when the disorder has lasted long, and requires a surgical operation, surgeons have frequently found themselves obliged to cut thro' several lamellæ, before the intestine laid bare, and the sack of the hernia entirely opened.

But perhaps it may not be so easy to know, in bodies of dropfical persons that are dissected, whether such a dropfy of the abdomen, as does not occupy the cavity of the belly, has its seat between the duplicature of the peritonæum, or between the peritonæum and the aponeurosis of the abdominal muscles; as, when the disorder has been of long standing, the membranes, which enclose this water, are greatly altered from their natural state. Nor does it seem of any great moment, with regard to the cure of this disease, whether the water be lodged between the duplicature of the peritonæum, or between the peritonæum and the aponeurosis. It will indeed always be of use, to know whether the water is lodged in the cavity of the abdomen, or not; and how this is to be known, we shall presently explain.

It may not be improper, however, to attend to what approved authors assert, from their observation of what they have seen in dissecting persons who die of this disease.

Nuck<sup>a</sup>, by experiments made on dogs, discovered that lymphatics ran between the duplicature of the peritonæum: and he thence deduces the origin of a dropsy of the peritonæum, which he calls a new disease, because he thought it was not known before he discovered it; and he thinks this disease is chiefly incident to gluttons, voracious feeders, and pregnant women; while on one hand, there is a pressure of a full stomach and intestines, or of the distended womb; and on the other, a resistance of the abdominal muscles to this pressure; whence, if the lymphatics be over filled, they may easily be burst, and lymph distil from them between the duplicature of the peritoneum. He afterwards relates a case of a dropfical woman, whose body he dissected, and whom he had tapped before her death, and drawn from her ninety-five pints of water. On cutting open the integuments of the abdomen, he was surprised not to see any of the viscera (for he thought the dropsy had been an ascites); but on a further scrutiny, and deeper incision, the viscera all shewed themselves; and, says he, *peritonæum sacciformem induisse figuram, intra cujus duplicaturam tanta aquarum moles abscondita fuerat observatum, internamque membranam ab externâ se cessare, & adeo incrassatam fuisse ut altera tantum peritonæi lamina naturalem hujus membranae constitutionem triplo quadruplove crassitie sua superaret & cavitate sua accuratissime aquam extravasatam servaret, ut ne guttula quidem abdominis viscera irroraret*; “ it was observable, that the peritonæum “ had assumed the form of a bag, in the duplicature “ whereof this vast mess of water was concealed; “ and that the internal membrane had receded from “ the external membrane, and was grown so thick, “ that

<sup>a</sup> Adenogr. curios. pag. 99.



“ that one of the lamina only was three or four  
“ times as thick as the whole peritonæum is in its  
“ natural state; and so exactly did this bag enclose  
“ the extravasated water, that not a drop escaped  
“ from it, so as to wet in the least the abdominal  
“ viscera.” He then relates a similar case from  
*Tulpius*<sup>b</sup>, of a dropfical woman, between the duplicature of whose peritonæum 110 pints of water were lodged, and bore with great spirits so prodigious a load of water for more than seven years; so that she was able to walk as well as a person in perfect health, to take long journies, and (which is still more surprising) to ascend the steps of a very high tower at *Cleves*: on dissection, all the viscera were found entire and uncorrupted, except the left kidney, which was bigger than common; as also the fallopian tubes, which were so obstructed, as to be quite impervious; the coats of the peritonæum, between which this immense collection of water was lodged, were a finger’s breadth thick.

The history of physic affords many like cases, which shew, that a vast quantity of water may often lodge in the abdominal region, and yet out of the cavity itself of the abdomen: but those already recited may suffice. It is, however, always found, that the membranes which contain the waters have been much vitiated and thickened; and, therefore, there does not seem to be sufficient ground certainly to conclude, that these waters were lodged between the duplicature of the peritonæum: for they, who are of the contrary opinion, may alledge, that the cellular membrane, placed between the peritonæum and the aponeurosis of the abdominal muscles, may seem much more likely to be depraved in the manner described above, than a thin simple membrane; and hence they will affirm, that the back-part of such a dropfical sack is formed by the peritonæum, but the fore-part by the aponeurosis. Besides, there  
are

<sup>b</sup> Observat. Med. Lib. IV. Cap. XLIV.

are observations<sup>c</sup> which shew, that such collection of water have been between the peritonæum and the transverse muscles; although many other observations affirm, that the waters were lodged in the duplicature of the peritonæum: but on attentively perusing the cases brought in proof of this, it does not appear to me, that the observers have absolutely demonstrated this. But most authors, according to their pre-conceived opinion, have pronounced, that the waters lodged in the region of the abdomen, but not in its cavity itself, had their seat in the duplicature of the peritonæum, or between this membrane and the aponeurosis.

Dr. Mead<sup>d</sup> holds the peritonæum to be a double membrane: and, according to him, there are three species of an ascites; the first, that wherein the water is lodged in the cavity of the abdomen; the second, when the water is extravasated between the aponeurosis of the transverse muscles and the peritonæum; the third, when the fluid, falling between the coats of the peritonæum, forms, by distending them, a large receptacle for itself. He was witness of a very singular case of a woman, who had all these three kinds of dropsies; *inciso enim cadavera, effluxit primum ex cavo, quod musculorum transversalium tendines à peritonæi sejuncti confecerant, magna aquæ copia, admixtis multis hydatidibus largis & nondum disruptis. Dein, secto peritonæo, crassiusculi & visceri humoris libræ septem aut octoeductæ, quibus glandulæ multæ corruptæ admiscebantur. Mirabamur jam nulla se in conspectum dare intestina, quæ frustra quærivimus; donec crassa membrana corii instar dissecta, ventriculū & omnia intestina simul cum omento in angustum spatium coacta, & quasi occultata tandem reperimus. Membrana hæc erat pars interior peritonæi, quod duplex esse jam diximus; cujus pars exterior, quum corium, ut notavi, prope referret, facile prima facie ita nobis imposuit, ut totum esse peritonæum putarem;*

<sup>c</sup> Philosophical Transactions, N<sup>o</sup> 299. pag. 1977. Abridg'd, Tom. V. pag. 286. <sup>d</sup> Monit. & Præcept. Med. pag. 128, &c.



*staremus*; “ the body being opened, a vast quantity of water first issued from the cavity formed between the tendons of the transverse muscles, (separated by the disease from the peritonæum) and the peritonæum, together with many large and intire hydatids. After this, the peritonæum being cut, seven or eight pints of a thick viscid humour came out, with which many putrified glands were mixed. We began now to wonder, that none of the intestines were visible, which we sought for in vain; till cutting through a membrane as thick as leather, we found at last the stomach, and all the intestines, together with the omentum, crowded into a narrow space, and, as it were, concealed. This membrane was the interior coat of the peritonæum, which we have already observed was doubled, and that the outer part resembled leather; which at first easily deceived us into an opinion, that this was the whole peritonæum.”

From all that has been said it seems to follow, that a dropfy may possibly have its seat between the duplicature of the peritonæum, although probably this happens but seldom; and it is not always very easy to distinguish, whether the water be lodged between the peritonæum and the aponeurosis of the abdominal muscles, or in the duplicature of the peritonæum, as the membranes are so vitiated; and sufficient time is not always allowed, for those who dissect the bodies of such as have died of this disease, to examine accurately into all particulars.

We are next to consider, by what symptoms ascites, (of which the water is lodged out of the cavity of the abdomen) is to be known: it is sufficiently evident, that these symptoms will be more distinguishable in the beginning of the disease, than when the dropfical swelling is increased to a vast size.

*Lifre*<sup>c</sup> has described the case of a lady, who died of a dropsy of the peritonæum; and has accurately enumerated the diagnostics of this disease, which are as follow:

1. The beginning of this disease is gradual, and the increase thereof slow: this is principally remarkable in the first stages.

2. The belly does not swell equally all over, when the water is lodged in the cavity of the abdomen: but the swelling seems circumscribed, especially towards the fore-part of the belly; and the form of it is not much altered, by the different postures of the body: and by this circumstance, it is distinguished from that kind of dropfical swelling caused by water collected in the cavity of the abdomen; for in this case, unless the abdomen be very much stretched, the swelling changes place, as the patient lies on the one or the other side. Thus also it may be distinguished from a beginning tumour of the ovary, which occupies the lower lateral region of the abdomen, and is for the most part attended with an obtuse pain; but it is to be noted, that it has been observed<sup>f</sup>, that the cavity of the abdomen was divided into two parts, by a hard membrane, an inch thick, placed obliquely, so as that beginning from the right kidney, and descending thence, it terminated at three inches from the lower part of the left kidney: in the upper part of the abdomen there was nothing extravasated; but the lower part was overflowed with a black, thick, glutinous humour, which had a cadaverous stench: in such a case, therefore, we easily see the abdomen must be unequally distended.

3. In some part of the abdomen (that is, out of the bounds of the swelling) no fluctuation is perceived.

4. The

<sup>c</sup> Academie des Sciences l'An. 1707. Mem. pag. 667, & seq.  
<sup>f</sup> Ibidem, l'An. 1703. Memoir, pag. 114.



4. The lower extremities do not swell; or, however, but little, and that very slowly.

5. The patient bears the disorder long, without the functions of the body being much impaired; and scarce suffers any other inconvenience than arises from the size and weight of the swelling gradually increasing.

Certainly a woman, whose belly was amazingly swelled, lived upwards of thirty years, healthy in other respects, and without any swelling of the legs, in whose body a vast quantity of water was found in the duplicature of the peritonæum<sup>e</sup>.

We read of a still more surprizing case<sup>h</sup>, of a woman who bore this disease forty-four years, and at last died in her eighty-second year, the swelling remaining the whole time in the same state. After her death, above fifty pints of a foetid, thick, viscid, salt humour, were found in the folds of the peritonæum.

*Listre* adds, in the place above quoted, some other symptoms also, which appear after the paracentesis has been performed: the whole quantity flows out; and when the bag, which contains the dropfical swelling, is entirely evacuated, and warm water injected by the trochar, all comes back again. But this is not the place to consider these symptoms; we shall speak of them hereafter. Those signs are only now to be considered, which discover the disease in its beginning.

When the water is lodged out of the cavity of the abdomen, the bowels are not soaked by it; wherefore the patients can support the disease longer, and enjoy tolerable health in other respects. And observations, in which we may confide, shew, that in these cases, a good complexion, a tolerably free secretion of good urine, a good appetite and digestion, and regular

VOL. XII.

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<sup>e</sup> Philosophical Transactions, N<sup>o</sup> 348. pag. 458. Abridged, Tom. V. pag. 288, 289. <sup>h</sup> Medical Observations and Enquiries, Tom. I. pag. 7, & seq.

alvine excretion, remain for many years: from which appearances also, we may deduce diagnostics for distinguishing this disease. The size of the tumour alone, when the dropsy is much increased, is troublesome, and injures the viscera by its pressure; but as both the peritonæum and the integuments of the abdomen easily give way, the abdominal viscera are not much compressed in the beginning of the disease.

But there are also better hopes of a cure in this kind of dropsy, than when the water is lodged in the cavity of the abdomen, as the dropical bag may be entirely emptied, by performing the paracentesis and if, on the admission of air, putrefaction should begin in the emptied bag, this might be corrected by anti-septic and detergent injections; the slimy feculence, which usually smears the surface of this kind of bag, might at the same time be washed off; and the sides of the bag be so cleared, that perhaps moderate compression might make them grow together, and the disease be entirely cured.

We are next to turn our thoughts to that kind of ascites, wherein the water is extravasated in the cavity itself of the abdomen; which, again, is of two kinds: for either the water fluctuates freely, and washes all the viscera of the abdomen, or it is collected in the dilated cavities of the glands, or in the vessels; in which case it is called, the encysted dropsy.

When the fluctuating water is collected in the cavity of the abdomen, it will give no tokens of its existence, till the abdomen begins to be distended by its increasing quantity. It is true, indeed, that from foregoing diseases, the altered complexion, the small quantity of urine, &c. a skilful physician frequently collects, that a dropsy is to be apprehended and thus foresees the future: but we are now speaking of the signs of a dropsy actually present. As the water, beginning to collect in the cavity of the abdomen



abdomen, by its weight sinks to the lower parts, this swelling will begin from the lower part of the abdomen, and ascend by degrees, as the quantity of the extravasated fluid increases: hence it is not strange, that an ascites is not easily known; and *Aretæus*<sup>i</sup> seems to point out this, when he says, *neque enim in inferiore ventre fluctuans humidum, hydrops nuncupamus: quando quidem neque ibi vitium est, sed quum morbum consequitur tumor, inflatio, coloris fæditas, iste in aquam habitus colliquescens, hydrops est, & vocatur*; “for  
 “neither do we call the fluid, fluctuating in the  
 “lower belly, a dropsy, as nothing is in fact there:  
 “but the disease proceeds to float and swell up the  
 “body; when the complexion grows sickly, the  
 “watery habit which produces these appearances is  
 “a dropsy, and goes by that name.” And soon  
 after, he adds, *si aqua copiosa in peritonæo continetur natentque in humore intestina, ascites*; “a  
 “great quantity of water is contained in the perito-  
 “næum, and the intestines float in it; this is called  
 “an ascites.” He observes also, that sometimes a  
 dropsy of that kind, which swells the whole body, is  
 joined with a dropsy in the flanks. On this account  
 he seems to have added the symptoms of an ana-  
 sarca, to those of an ascites; for thus he speaks, *in ascites in ilibus tumorem, in pedibus inflationem (oîdos) videre licet: facies, brachia & reliqua gracilia cernuntur, intumescunt testes, præputium & totus coles ob inequalitatem tumoris tortuosus est. Tangito vero & aliquam in partem manum imprimens intro moderate pellito, et alias enim partes humiditas transluet. Verum etiam in corporis ad alterutrum latus conversionibus humor in locum declivem & tumorem & fluctuationem faciet, fluctuantisque liquoris sonitus exauditur*; “in an ascites,  
 “one may see a swelling in the flanks, and an  
 “œdema of the feet; the face, arms, and the rest  
 “of the body become thin, the testicles swell, the

Y 2

præpu-

<sup>i</sup> De caus. & sign. morbor. diurn. Lib. II. Cap. 1. pag. 8, 49.

“ præputium and the whole penis are twisted crooked  
 “ by the unequal swelling. If you touch any part  
 “ and gently press it inwards, the water will shift  
 “ to another part; and even in turning the body  
 “ from one side to another, the water falling to the  
 “ side which is lowest, will make a swelling and  
 “ fluctuation, and the sound of the fluctuating wa-  
 “ ter is heard.”

It appears, therefore, that when the abdomen be-  
 gins to fill with water, the swelling is first perceived  
 in the flanks; and as the belly grows fuller, there  
 ensues a greater pressure on the lower parts of the  
 belly, by which means the iliac veins are compressed  
 and hence, in an ascites, the legs and thighs are  
 oftenest swelled; whereas, when the water is collected  
 between the muscles of the abdomen and the peritonæum  
 or in the double folds of the peritonæum itself, the iliac  
 veins are not compressed; and therefore, as was lately  
 observed, the lower limbs are not all swelled, or very  
 little; and that after a long time, when the swelling  
 in the abdomen being greatly increased, the viscera of  
 that region are much compressed.

But the fluctuation of the contained water, and its  
 falling towards the side on which the patient lies, are  
 most easily perceived, when the whole cavity of the  
 abdomen is not as yet filled with water: for when one  
 shakes a bottle quite full of liquid, no sound nor  
 fluctuation is perceived. But as physicians sometimes  
 are not consulted, till the disease is at its height, and  
 the whole abdomen is full and turgid, there is more  
 need of caution in forming a diagnosis. It will cer-  
 tainly be of great service, to have a right knowledge  
 of the history of the disease in its beginning: but this  
 is often wanting; and can hardly be obtained with  
 any accuracy, from the patient or the attendants.  
 But the physicians are used to examine the swelled  
 abdomen in this manner: they apply their fingers to  
 each side of the belly, and the

strike



strike strongly with one finger on one side; if then they feel by the fingers applied on the opposite side at the same time, they judge (and with reason) that the abdomen is filled with fluid. Monsieur *Du Verney* the younger<sup>k</sup> has observed, that on account of the great tension, or from the thickness of the integuments, the fluctuation cannot be perceived by this method; in which case he advises, that putting one hand on the navel, with the other we should strike the lower part of the abdomen, so that the force of the stroke may be directed towards the upper part. But although this gentleman was well versed in this examination of dropfical persons, yet he candidly owns, that he has sometimes been deceived, having imagined he could perceive a fluctuation, when nevertheless he has afterwards found no water in the cavity of the abdomen; but that the intestines were full of wind, and of a glutinous matter.

The best physicians, and such as were most versed in the diagnostics of this disease, have been known to mistake. *Sydenham*<sup>l</sup> observes, that preternatural fleshy excrescencies have sometimes been mistaken for dropfies, as also have flatulencies; of which we shall make mention, when we come to speak of the tympany. We read<sup>m</sup> of a wonderful case of this kind. A lady of forty-seven years old, being under deep affliction for the death of an only son, began to languish and grow thin: after this, the abdomen swelled gradually; and as all the symptoms of an ascites appeared, the paracentesis was tried four times without any effect, as no water at all came out, although a fluctuation was evidently perceived. On dissection, the left kidney was found of an enormous size, and weighed thirty-five pounds, and was quite altered from its natural conformation. The water, whereof the fluctuation was perceived while

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the

<sup>k</sup> Academ. des Sciences, l'An. 1703. Mem. pag. 186. <sup>l</sup> De Hydrope, pag. 611. <sup>m</sup> Academie des Sciences, l'An. 1732. Histoire, pag. 45, & seq.

the patient was living, lodged only in the void interstices left by this prodigious kidney ; so that it is not to be wondered, that the paracentesis produced no evacuation. Like instances are to be found in *Bonet*<sup>n</sup>, and other writers.

It is therefore evident, that we are not to form any conclusion rashly in this case ; and that the physician's reputation for discovering diagnostics, will be in some danger, unless he be very attentive to every thing that has happened through the whole course of the disease.

But if so much caution and skill be necessary, to determine, whether the swelling of the abdomen is caused by a fluid collected in the cavity, still more is required, to pronounce concerning the nature and qualities of the fluid contained there. Professor *Vernage*<sup>o</sup> saw, to his great surprize, on piercing the abdomen of a dropical virgin, that no water issued forth ; but instead thereof, a fluid, which in colour and consistence resembled milk, and even (except that it was a little saltier) in taste : it frothed like milk, when let fall from any height, and swelled, when put over the fire ; but it was much lighter than milk, and did not coagulate with acids, but only when salt of tartar was mixed with it. It was found necessary to repeat the paracentesis every fortnight, and at each time thirteen, fourteen, nay, fifteen pints of this liquid were drawn away : she laboured under this disease a whole year, and then died. A healthy girl, seven years old, after a fall on her head, began to languish : a chylous fluid was discharged along with the fæces, and her whole body was emaciated : this chylous flux then ceased, and the abdomen began to swell ; six or seven pints of a chylous fluid were drawn off by tapping, and she died a fortnight afterwards. After death, the same quantity of a like fluid

<sup>n</sup> Sepulcr. Anat. Tom. II. pag. 448, and in many other places.  
<sup>o</sup> Academie des Sciences, l'An. 1700. Hist. pag. 15.



fluid was found in the cavity of the abdomen<sup>p</sup>. Sometimes, although a manifest fluctuation may be perceived, a small quantity of a tremulous, gelatinous fluid is brought out on piercing the abdomen; as happened with me, in the case of an old maid; who would by no means be persuaded to admit of the surgeon's hand, and on whom I performed the operation of the paracentesis; for although I made use of a tolerably large canula, yet on drawing out the trochar, nothing flowed out; yet the probe being put in through the canula, found no obstacle, and with difficulty, on compressing the tumid abdomen, ten ounces of a brownish kind of jelly were squeezed out.

Sometimes the water issues forth bloody, sometimes green, brown, &c. nay, on repeated tapping, a different fluid is let out each time; as will be mentioned hereafter, when we come to speak of the operation.

Hence the physician's safest way seems to be, to affirm nothing certain concerning the nature of the fluid, before the operation is performed.

But the water in an ascites does not often float freely, but is often found to be contained in greater or less membranous receptacles, and then it is called the encysted dropsy.

We can easily conceive it possible, that membranous cavities may be filled with lymph, and gradually distended, as the quantity of the fluid increases; and that they may be stretched to a great bulk, if the excretory duct be by any means rendered impervious; and we frequently see such tumours in the external parts of the body; as for instance, in the borders of the eye-lids, and these tumours are usually called hydatids: but it is certain, that the same thing may also happen in the cellular membrane. I have seen such small hydatids in the white of the eye, on

Y 4

the

<sup>p</sup> Academie des Sciences, L'An. 1710. Histoire, pag. 52.

the edge of the cornea, and on the sclerotica; nay, even on the surface itself of the cornea, which, being pricked with the point of a lancet, presently subsided, leaving no injury behind them. And on another occasion, §. 1121. when we were treating of obstructions, I noted, that *Ruyfch* had seen an entire placenta which had degenerated into hydatids; and I have in my own possession, part of such a morbid placenta, but it was noted at the same time, that sometime such hydatids had been found floating at large (without any connection either with each other, or with the neighbouring parts) in one common larger membranous bag: nay, there have been found large hydatids, which contained others of less size, freely floating in their cavities.

The ancient physicians were acquainted with this species of the dropsy; for thus we find *Areteus*<sup>1</sup> expressing himself, *alia quædam hydropici morbi speciei talis agnoscitur: vesiculæ quædam pusillæ, crebræ, humoris plenæ, in loco ubi ascites fibri solet excitantur. Cæterum quod humore multo impleantur illud indicio est. Si abdomen perforaveris parum admodum humoris effundes, ab interiori nempe parte vesica occlusit, at si in vesicam instrumentum impuleris, iterum effluit hæc autem hydropis species haud levis est*; “ another kind of  
“ dropsy has been observed, of the following nature;  
“ numerous small bladders are formed in the  
“ cavity, which is the usual seat of the ascites; and  
“ that these bladders contain a great quantity of fluid.  
“ this is a proof: if the abdomen be pierced, a very  
“ small quantity of water is drawn out, because  
“ these bladders include it, and prevent its falling  
“ into the cavity; but if you push the instrument  
“ so far as to penetrate the bladders themselves, the  
“ water flows out; and this is no slight kind of  
“ dropsy.”

At the same time this author ingenuously confesses, that he knew nothing certain concerning the origin of

<sup>1</sup> De caus. & sign. morb. diut. Lib. II. Cap. 1. pag. 51.



of these bladders. But *Aetius*<sup>r</sup> also writes in like manner; *fiunt etiam aliquando bullæ inter peritonæum pelliculam & intestina, figura vesicæ similes & scrotum humorem continentur. Hæ ipsæ sane per fluctuationes quasdam inequales deprehenduntur: nimirum proprium locum secundum lineamenta quædam distributum ac velut circumscriptum ipso humore tenente*; “there arise sometimes small swellings, in form like bladders, between the peritonæum, the omentum, and the intestines; and these swellings contain a serous fluid: they are to be known by an unequal fluctuation, not perceivable all over the belly, but in some particular place confined, as it were, by lines drawn as boundaries, which is the peculiar seat occupied by the fluid.”

But although some place the origin of hydatids in the cavities of glands preternaturally dilated, or of the cellular-membrane, yet others have thought the lymphatics most likely to be vitiated in this manner. *Nuck*<sup>s</sup>, who very carefully examined the lymphatics, very carefully asserts, that they sometimes in a morbid state become hydatids. Professor *Morand*<sup>t</sup>, who embraces *Nuck*'s opinion, very ingeniously illustrates and confirms it. Hydatids most commonly are lodged, at their first formation, under the external membranes of their viscera; but here are likewise numerous lymphatics. The hydatids contain a lymph, like that which flows through the lymphatics: the lymphatics, through their whole length, appear as it were knotted, as their cavities are every where distinguished into separate partitions, by two valves, of which the structure is so contrived, as that they easily yield a passage to the lymph flowing from the narrower to the wider part of the lymphatic vessel, but put an obstacle to the return of the lymph from the wider part of the vessel to the narrower.

<sup>r</sup> Sermon. X. Cap. xx. pag. 234. <sup>s</sup> Adenograph. curios. pag. 88. <sup>t</sup> Académie des Sciences, l'An. 1723. Histoire, pag. 32, & seq.



rower. It is observable also, that the lymphatics appear most contracted; at that part where the valve is placed: the valves themselves, on the side towards the wider part of the lymphatic, are concave, and convex on the other side. If now, from any cause, these tender lymphatics are compressed, or any obstruction is formed, which hinders the free discharge of the lymph from the lymphatics into the larger veins, these spaces between the valves will swell, the concave side of the valves will be distended by the incumbent fluid; the double valves lying close upon each other, being dilated by pressure and the yielding nature of the lymph, may unite and adhere to each other; and by this means, all that part of the lymphatic vessels, which is between the two valves, will be distended, so as to become an hydatid, as the lymph perpetually presses on behind, before the valves are come to adhere entirely to one another: nor does it seem impossible, that an hydatid so found may be loosened from the continuity of the lymphatic (as these vessels are exceeding fine) and fall into the cavity of the abdomen; and this would account for the origin of hydatids floating at large.

This ingenious writer is also of opinion, that each of the valves, when greatly distended, might degenerate into hydatids, as by degrees, from the degenerating lymph, an entire globe might be formed from the valve; and as some space might still remain between two such small globes, some quantity of lymph getting through, might increase the bulk of the hydatids thus formed, till at last that small quantity which still transuded, moving very slowly, or even entirely stagnating, might be concreted, and adhere to the hydatids already formed. Thus he endeavours to explain the rise of those hydatids, which are called *racemosæ*, *clustering*, because they cling together like clusters of grapes.

But inasmuch as (which we shall remark hereafter, §. 1229.) all obstinate obstructions of the viscera,



viscera, and also scirruses, are esteemed causes of the dropsy, this opinion, that hydatids may be formed from vitiated lymphatics, does not seem altogether incredible, although it is not without its difficulties, which perhaps more observations respecting this disease, may remove.

Whatever be determined concerning the origin of hydatids, it is certain they have been found in dead bodies. *Bianchi* <sup>u</sup> affirms, that he saw the body of a man aged forty, wherein *viscera abdominis omnia, hepaticam, lienem, mesenterium, pancreas, renes, vesicam intestina, &c. non tantum innumeris pene atriculis serourgidis, ac omnino hydatidum speciem representantibus obsita; sed hæ invicem hydatides sibi invicem per quatuor aut quinque densissime superincumbebant*; “not only all the viscera of the abdomen, the liver, spleen, mesentery, pancreas, kidneys, bladder, intestines, &c. were full of innumerable small bladders distended with serum, and entirely resembling hydatids; but moreover, these supposed hydatids lay thick in four or five rows one over the other.” But as he had found like hydatids in the cavity of the intestines, and lymphatics had not been observed by anatomists to be so numerous on the surface of the viscera, as that they should lie in several rows one upon another. Hence he was not inclined to refer the original of these hydatids to a disease of the lymphatics, but rather to the membrane which surrounds the viscera being swelled up at various distances, by serum extravasated beneath it. But he asserts, that hydatids may be distinguished from other watery humours by their extreme transparency.

A like case is also related by *Schenck* <sup>w</sup> of a dropical woman, in whom all the viscera had, both on their surface and in their cavities, pendulous receptacles filled with a citron-coloured water, which kept sweet more than twenty days. Nor were even the cavities

<sup>u</sup> *Histor. Hepat. Tom. I. Part II. Cap. III. §. 2. pag. 139.*  
<sup>w</sup> *Observ. Med. Lib. III. Observ. IV. pag. 341.*

vities of the heart, the stomach, intestines, &c. free from this disease, which seems surprizing. Numerous instances of an encysted dropsy occur in writers but it seems superfluous to relate any more.

It will always, however, be of service to the physician, to be able to know whether the swelling of the abdomen is caused by water floating in the cavity or by an encysted dropsy. *Du Verney*\*, whom we quoted above, has recapitulated the symptoms: if for instance, the swelling has augmented slowly, if that two years or more have past before the abdomen grew to a great size; if towards the beginning of this disease, the patient perceived a round swelling, which increased gradually without being very troublesome; if the feet, legs, and thighs began to swell late, and the belly did not change its figure when the patient altered his posture (as it does when the water floats at large in the cavity of the abdomen.) We see that most of these signs agree with those which we enumerated above, when speaking of the way to distinguish a dropsy of the peritonæum.

However, great circumspection is necessary in forming these diagnostics, if the physician have not properly attended the patient from the beginning of the disease. *Tumor observatus fuit durus ventris, enormis, æqualis, in corpore summè cachetico, ubi omnis suspicio enormis hydropis saccati aderat, maxime cum totum abdomen expleret, exceptâ infima hypogastrica regione in adolescente quatuordecim annorum spina ventosâ, omnes dorso & lumbi vertebrae, & os sacrum exedente enectò ubi tamen monstrosu abdominis moles unicè debebatur sanctissimis & citra notatum anatomicis exemplum mole immensis hepatis & lienis*†: “ a young man had a  
“ hard swelling in the belly, of an enormous size  
“ and smooth, in a very cachetic habit, in which  
“ there was all the reason possible to suspect an encysted  
“ ed dropsy, as the swelling extended over the whole  
“ abdomen.

\* Academie des Sciences, L'An. 1703. Memoir. pag. 195.  
† Ant. de Haen. meth. med. Part. iv. pag. 99.



“ abdomen, except the lowest hypogastric region :  
“ this youth perished of a spina ventosa, which had  
“ rendered carious all the vertebræ of the back and  
“ loins, and the os sacrum itself ; and this monstrous  
“ size of the abdomen proceeded solely from the  
“ monstrous size, beyond all instances ever known  
“ by anatomists, of the liver and spleen, both how-  
“ ever perfectly sound.” How shameful a mistake  
would it have been, to advise the operation of the  
paracentesis in this case ?

Besides it may happen, that such a dropfical bag  
being over-stretched by the collected water may burst,  
and then all the water be effused into the cavity of  
the abdomen. It is true, indeed, that frequently the  
sides of a bag of this kind grow thicker as the dis-  
tension increases ; but there have been found after  
death (when the whole abdomen was full of water)  
the torn pieces of a large bag which had formerly  
contained the water.

Nor is this all ; but it has also been found that  
water was lodged in the cavity of the abdomen, al-  
though there were an encysted dropsy at the same  
time. A remarkable instance to this purpose is re-  
lated<sup>2</sup> : on piercing the abdomen, a small quantity  
of water flowed out ; the swelling of the belly was  
not much diminished ; but on putting the probe  
through the canula, it was evident, that the needle  
of the trochar had penetrated the cavity of the ab-  
domen : a manifest resistance was felt ; and as Mon-  
sieur *Du Verney*, who had great skill in this disease,  
was certain he touched a cyst or bag, he pierced it,  
and there flowed out about six pints of a yellowish,  
mucilaginous humour, which was entirely different  
from that which had issued from the cavity of the  
abdomen. He repeated the operation on this pa-  
tient with some precaution ; and afterwards perform-  
ed it under the same circumstances on other patients,  
with a like event.

However,

<sup>2</sup> Academie des Sciences, in loc. mod. citat.

However, it appears that the physician ought to be very certain of not mistaking the diagnostic symptoms of this disease, before he ventures to pierce swelling which resists the canula, as schirrous tumours have so frequently been found to accompany the dropsy, which, when the abdomen is distended by the water, are not sensible to the touch.

The abdomen has also been found greatly swelled although no water were contained either in the cavity of the abdomen, or in the duplicature of the peritonæum, or between the peritonæum and the abdominal muscles; but the whole tumour proceeded from a rarified vapour: this kind of swelling is called a *tympany* (from the word *tympanum*, a drum) because the turgid abdomen, struck by the hand, sounds like a drum. Physicians also sometimes call this a *dry dropsy*.

Galen<sup>a</sup>, discoursing of the fulness of the pulse, says, we cannot know by the touch, whether air only, or water also, be contained in the arteries; and on this occasion he adds, as an instance to confirm what he has been saying, that we cannot in a dropsy know merely by the touch, whether water or air be contained in the belly: *sed ad veram notitiam comparandam pulsare cogimur abdomen* (τὸ ἐπιγαστριον) *ut cognoscamus, si velut tympanum resonet, secundo loco aliter componere hominem, & in latera convertere quo fluctuationem aliquam audiamus, ac nobis strepitus per modum tympani spiritum annuntiat, fluctuatio humorem, uno vero admoto tactu distentum abdomen non deprehendas ex aëre sit an ex aquâ;* “ but in order to be certain, we are obliged “ to strike the abdomen, (τὸ ἐπιγαστριον) to try whether it will sound from the blow like a drum; or “ to change the patient’s posture, and make him “ lie on one side and on another, to find if we can “ perceive any fluctuation: the noise, like the sound “ of a drum, shews that air (or a vapour) distends “ the

<sup>a</sup> De Diagnost. Puls. Lib. IV. Cap. III. Charter. Tom. VIII. pag. 163.



the abdomen; and the fluctuation is a sign, that the belly is swelled with water: but the touch alone will not enable us to determine, whether the tension of the abdomen proceeds from air or from water." It is to be noted, that *Galen* calls that which distends the abdomen in a tympany, at one time *aër*, air; and at another, *spiritus*, spirit, or vapour. But we shewed in the beginning of this chapter, that the ancient physicians called that steam or vapour, which fills all the cavities of the body, spirit; but when this steam was condensed into a visible fluid, they called it then *ichor*: and they also believed, that the elastic vapour, which distends the abdomen in a tympany, was capable of being changed into water. Hence *Aetius*<sup>b</sup>, treating of this disease, says, *tympanites vero flatus aëre repleti, ac superflui plurimam collectionem, in iisdem ventri incumben- tibus flocis facit ut in principio sola inflatio esse videatur: postea tamen flatus inspissatur, & velut nubi- bus, atque ita una cum flatu quasi nebulosus humor con- sistis & congregatur*; "a tympany is a flatulent tu- mour, formed of superfluous air distending the parts near the epigastric region; and at the be- ginning, there seems to be nothing but air in this tumour: but afterwards, this aërial vapour grows thick, and becomes as it were misty; and thus a misty kind of fluid is collected, together with the air." Thus also *Aretæus*<sup>c</sup> calls this disease, *humidam suffusionem, quæ in ilibus fluctuat & præ infla- tione cum verberantur, tympanum quodammodo referant*; "a moist suffusion, which fluctuates in the flanks, which being inflated, sound when they receive a blow, like a drum." He seems to be entirely of opinion, that this condensed vapour would pro- duce an ascites: for thus he speaks soon after; *tym- panias autem ultra tumores spectaculum, etiam auditu sonorus est nam ad palmæ percussum abdomen sonum edit: neque*

<sup>b</sup> Sermo. X. Cap. xx. 233. <sup>c</sup> De caus. & sign. morb. diuturn. Lib. II. Cap. 1. pag. 49.

*neque ad corporis conversionem spiritus locum mutat. Et si enim locus ambiens aliquantum inclinet spiritus tamen æquales supra infra ubique permanet, cæterum si in nebulam & aquam spiritus vertatur, (nam ascites et tympania gignitur) si ne perfecte aliquando mutatus fuerit, ex dimidio factus in ventre fluctuat;* “ the tympany is discoverable, not only by the swelling to the sight, but also to the ear by the sound; for the abdomen, struck by the hand, emits a sound nor does the air change place by the turning of the body: for altho’ the cavity which contains the air be somewhat stooping, yet there remains the same quantity of air both above and below: but if the air be changed to mist or water (for an ascites sometimes is generated from a tympany) it will all be not so converted, but only a part, that part now become water, fluctuates in the belly.”

After his time, some of the most famous physicians appear to have been of the same opinion, and to have thought, that the tympany could scarcely be accounted a peculiar species of dropsy. For thus *Hoffman* expresses himself<sup>d</sup>; *quod illam speciem quam tympanitis itemque hydrops siccus appellari solet, ubi abdomen valde tense & inflatum ad palmæ percussum instans tympani edit sonum, sciendum est, eum symptoma potius anasarcae & ascitis, quam certam hydropis speciem esse dicendam;* “ as to that kind which has been usually called a tympany, or dry dropsy, it is to be noted, that this is rather to be called a symptomatic disorder accompanying the ascites and anasarca, than a distinct species of dropsy.” But although it sometimes happens, that the tympany accompanies or follows other dropsies; yet it will appear, from what is to follow, that a true tympany sometimes has been found alone. Nay, *Hoffman* himself in another place<sup>e</sup> says, that it is a different disease, and is produced in the abdomen, without any extravasation

<sup>d</sup> Med. Ration. & Systemat. Tom. IV. Part. iv. pag. 425.  
<sup>e</sup> Ibidem, pag. 486.



tion of water. It is not, therefore, to be believed, that when the abdomen sounds on a blow like a drum, that water is always present in the abdomen as well as air, and that a paracentesis is proper; for this might lead us into a mistake, as shameful as that in the case mentioned by *Helmont*<sup>f</sup>; *vir quidam suassu medentum, paracentesin a latere umbilici sustinens, qui hydropicus censebatur, utque aquam elicerent, me juvene spectante extracto chirurgi phlebotomo, repente sedit abdomen, & quam primum periit; editus autem flatus immenso putidus, & cadaver olebat*; “a certain man was persuaded by his physician, who thought him dropfical, to undergo the operation of the paracentesis, in order to let out the water; which was accordingly performed on the side of the belly, near the navel; (and I, then a youth, was a spectator of it:) on the surgeon’s drawing out the instrument again, the abdomen sunk, and the patient died almost immediately; an extreme foetid blast of wind burst from him, and the stench of the body was great.” It is requisite, therefore, that all imaginable care should be used, in examining the symptoms which indicate the existence of a tympany, and distinguish it from an ascites: for skilful physicians have sometimes been deceived in this matter, and have obstinately maintained the disease to be a tympany, when the operation of the paracentesis have afterwards shewn it to be an ascites; and on the other hand, physicians have sometimes thought they perceived a manifest fluctuation of water lodged in the abdomen, when distension has afterwards shewn, that there was no fluid extravasated; but that the swelling arose entirely from the intestines being filled and inflated with viscidities and flatulencies. Monsieur *DuRoi* the younger, candidly mentions his mistake in this affair<sup>g</sup>.

VOL. XII.

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<sup>f</sup> Capit. Ignotus Hydrops, pag. 416. ad Num. 44.  
<sup>g</sup> Académie des Sciences, l’An. 1703. Mem. pag. 186.

In a tympany, the abdomen is never distended so vast a size as in an ascites; and it is flatter towards the sides, and more prominent forwards; evident fluctuation is not perceived: if a blow given on the belly, it sounds obtusely like a drum, or one not sufficiently tight stretched<sup>h</sup>. Monsieur *Combalusier*<sup>i</sup>, collecting all these symptoms, thus defines a tympany; *est totius abdominis utricularum tumor, renitens ad sensum levis constanter sursum, versus umbilicum prominens, percussione facta tinniens pressus mox se attolens ructu, borborygmis, & contumacia ut plurimum ventris ad strictione stipatus a flatibus oriundus*; “it is a tumour of the whole abdomen, like a bag in form, hard and resisting, but not sensibly heavy; constantly prominent upwards, and towards the navel resounding from a stroke; presently rising again, after having been pressed down; accompanied generally with eructations, borborygms, and an obstinate costiveness, and arising from flatulencies.” To these he adds in another passage<sup>k</sup>, that in a tympany, the skin of the abdomen is white, tense, and elastic; that it resists pressure, and quickly rises again; that the form of the belly does not alter on shifting the posture of lying and for the most part, the pulse is harder and fuller than in an ascites, in which it is generally small and more languid. But although all these symptoms have a share in forming the diagnostics of this disease, yet the principal are these two: if the belly sound from a blow like a drum, and if the patient appear light on being weighed; whereas in an ascites the patients are very heavy, on account of the water lodged in the cavity.

But inasmuch as, according to what was observed §. 1224. elastic air included in the cavity of the womb (the orifice of the womb being closed) some time

<sup>h</sup> Ibidem. pag. 229.

<sup>i</sup> Pneumato-Pathol. pag. 23.

<sup>k</sup> Ibidem.



times inflated this viscus: hence it was formerly a very common opinion, that a tympany proceeded from air lodged in the cavity of the abdomen; but although this may sometimes be the case, yet dissection teaches us, that it happens but seldom, and that the stomach and intestines being enormously distended by rarified air lodged in them, cause a tympany. Professor *Littre*<sup>l</sup> performed the operation of the paracentesis on the bodies of several persons who died of this disease: the abdomen did not sink; and when, after drawing out the trochar, a candle was applied to the orifice of the canula, the flame was not moved, although the abdomen were pressed on every side. When the tympany had not been of long duration, a very little fluid was found in the cavity of the belly: if the disease had lasted a long time, about three pints of water were found; which small quantity was not at all answerable to the prodigious distension of the abdomen: but he always found the stomach and intestines (especially the intestina crassa) distended, so that the cœcum and colon were sometimes as big as a man's thigh. Hence he concluded, that a tympany was not produced by air collected in the cavity of the abdomen, but from the inflation of the stomach and intestines. *Sinopeus*<sup>m</sup> also confirms this opinion by his observations; for he tells us, that on pushing the instrument into the belly (most enormously swelled) of a dead body, which a very large coffin could scarce contain, neither water nor air issued forth: and he afterwards saw, in many persons dead of this disease, the intestines prodigiously distended with air, although but a small quantity of water floated in the windings of the guts.

*De Haen*, professor at *Vienna*<sup>n</sup>, after enumerating the opinions of various authors concerning the seat of this disease, entirely approves of the determination

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Academie des Sciences, l'An. 1713. Mem. pag. 315. <sup>m</sup> *Pa-*  
*g. Med. pag. 14.*      <sup>n</sup> *Rat. Med. Part. alt. Cap. v. pag. 73,*  
*eq.*

of professor *Littre*, inasmuch as he had found in the body of a man, who had had a tympany three years, the colon greatly dilated, so that in some places it was equal in size to the arm, in others, to the thigh of a man; and all the intestina tenuia, and also the stomach, were twice or thrice as wide as they are naturally; so that, from their being so uncommonly distended, the shape of the thorax was much altered, and both the lungs and heart compressed. But as he communicates his useful labours yearly to the public, this gentleman, not less remarkable for his candour than for his unwearied assiduity, relates also another instance of a tympany<sup>o</sup>, under which a boy six years old had languished for a long time, so as to be swelled sometimes more, sometimes less, but never to be entirely free from the swelling; during the last month of his life, the abdomen swelled to a vast size, and he was costive; however, his belly was not swelled equally all over, but appeared uneven, with many bunches, some round and some oblong. The abdomen being cut open after death, no water was found; but the whole swelling was found to proceed from the intestina crassa being unequally swelled with air, more in some parts, in others less; but they contained an immense quantity of air and of hard fæces. From this instance it appears how the abdomen may be greatly distended in a tympany; but yet not equally all over, as the intestina may be more dilated in one part of their canal, and less in another part; and even a remarkable hardness will be felt near that part where the hardened fæces are lodged, while a flatulent tumour only distends the rest of the abdomen: at the same time the various situations of the colon, quite different from its natural site (which are frequent in this disease) are worthy of note; as we mentioned before in the chapter of wounds.

<sup>o</sup> Ibidem, Part. iv. pag. 59, & seq.



As, therefore, the most common seat of the tympany is the stomach and intestines, both crassa and tenuia, sometimes in one intestine, sometimes in several, or in all together: and as accurate experiments teach us, that a tympany, or dry dropsy, often follows inflammatory disorders of the bowels; from hence some places in *Hippocrates* become intelligible, which else seem obscure; for he says<sup>p</sup>, *quibus tormina & circa umbilicum labores, & lumborum dolor qui neque medicamento purgante, neque alias solvitur in hydropem siccum formatur*; “they who are afflicted with gripings and pains about the navel, and a pain of the loins, which is not removed by purging, or any other means, fall into a dry dropsy.” For gripes precede, when the intestines are distended by flatulencies: and as the intestina tenuia, in their natural situation, occupy the umbilical region, these then seem to be the seat of the disorder; and in fact, the intestina tenuia have been found greatly distended, in the bodies of persons who had died of this disorder: but the intestina crassa also are likely to undergo great changes in their situation, as was said a little above; and the colon has been known to occupy the region of the navel: but when the intestines are greatly distended, the mesentery will of consequence be stretched, if the disorder is seated in the intestina tenuia, and the mesocolon, if it occupies the intestina crassa. Now we know that the mesentery and mesocolon are connected with the loins; and hence the reason appears, why a pain of the loins, according to *Hippocrates*, prognosticates a dry dropsy; but if, by purging or any other means, the load of slime on the intestines be cleared away, and the wind expelled, before the intestines have altogether lost their tone, the disorder is removed. We read in the *Prænotiones Coacæ*<sup>q</sup> as follows; *dolor supra umbilicum & lumborum dolor, si medicamentis non solvantur*

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<sup>p</sup> Aphor. Sect. iv. Charter. Tom. IV. pag. 138.  
Charter. Tom. VIII. pag. 869.

<sup>q</sup> N<sup>o</sup> 305.

*ur in hydropem siccum desinunt*; “ a pain above the  
 “ navel and a pain in the loins, if not removed by  
 “ medicine, are the fore-runners of a dry dropsy.  
 In this case, it is likely that the seat of the disease is  
 principally in the colon. Elsewhere are these words  
*orthopnæam facit hydrops siccus*; “ a dry dropsy causes  
 “ an orthopnæa:” for the abdomen being immoderately  
 distended, the cavity of the thorax is straitened;  
 as happened in the case of the boy of five years old,  
 related above; *in hydrope sicco sui significationem præmittente, tormina circa tenue (intestinum) multa*<sup>s</sup>;  
 “ among the symptoms, which forewarn us of  
 “ the approach of a dry dropsy, gripings in the region  
 “ of the small guts are a bad sign:” and a little before,  
 we read<sup>t</sup>, *in hydropicis siccis urinæ stillicidia mala  
 malæ etiam urinæ parva sedimenta habentes*; “ strangu-  
 “ ries are a bad sign in dry dropsies; as also urines  
 “ in which there is but little sediment:” for this  
 shews, that the stomach and intestines are so inflated  
 as to compress the kidneys and ureters, and impede  
 the secretion and excretion of the urine; and an hæ-  
 maturia frequently also arises from the same cause, as  
 will presently be seen.

Professor *Littre*<sup>u</sup> well explains the manner in which  
 the stomach and intestines may be so inflated with  
 air, as to produce a tympany. The œsophagus al-  
 ways freely admits the air, being always open at the  
 upper end; and besides this, it transmits air into the  
 stomach along with the food: perhaps also, when  
 the stomach itself is empty, and suspended from both  
 its orifices, the upper orifice of the stomach not being  
 quite closed, may give a free entrance to the air,  
 which, therefore, will move about freely in the ca-  
 vity of the stomach and intestines. Of what use  
 the air is in digesting the food, physiologists explain.  
 The air, indeed, is expanded by the internal heat of

<sup>r</sup> Ibidem, N° 458. pag. 879.

<sup>s</sup> Ibidem, N° 458. pag. 879.

<sup>t</sup> Ibidem, N° 458. pag. 879.

<sup>u</sup> Academie des Sciences, l'A.

1713. Memoir. pag. 318, & seq.



the body ; but as the whole alimentary tube is muscular, and consists of strong membranes, it resists its being dilated, and presses together the contents of its cavity. If the abdomen of a living animal be suddenly cut open, the intestines appear solid, sound, and smooth, and scarce seem to have any cavity. In a dead body, the intestina tenuia appear very membranous, and with a considerable cavity, as after death, that muscular force, by which dilatation from the distending air ceases ; and as the viscera remain warm for some hours after death, the intestines (no longer able to contract themselves by their muscular power) are distended by the rarefied air.

Now *Littre* considered the rarefied air in the alimentary tube distending the intestines, and the contractile force of the intestines, as two opposite contending powers. In health, the contractile force of the intestines prevails, else it is scarce conceivable, that when a person has drank six pints and more of medicated water, the whole should be re-absorbed by the intestines, without any part being discharged by stool : but if there be too great a quantity of air in the alimentary tube, or if it be too much rarefied, it is expelled by the contractile force of the intestines, by eructation, &c. Hence the stomach, which so often receives crude and flatulent food, fermenting liquors, &c. and is even sometimes overloaded with these sorts of things, expels the too copious or too quickly rarefied air, generated by such meats and drinks, by the superior orifice, and so through the œsophagus, with a blast ; but in the intestina crassa, the residue of the food is collected after all the nutritious have been extravasated juices (from it) together with those things secreted from the humours of the body, and mixed through the whole length of the alimentary tube, there are manifest signs of putrefaction : but it was demonstrated on another occasion, §. 647. that putrescent juices generate elastic air ; and hence it appears, why the in-

testina crassa are most frequently the seat of flatulencies. The intestina crassa are of a greater diameter than the tenuia, have stronger coats, and a tripl ligament, which resists any immoderate distension and strengthens them considerably through the whole length of their canal: and hence the rectum, when irritated by rarefied air, resists the effort to distend it and contracting itself, strongly expels the flatus. And how great the force is, with which the rectum contracts itself, is evident from hence, that flatulences, and even the fæces are forced out sometimes violently against the efforts of a strong man.

If now, from any cause, the contractile force of the intestines should be weakened, they may yield to the distending air, which then would produce tympany; for which reason it is often produced, when the solids have been weakened by long diseases, as also, after frequent returns of the iliac passion; as appears from the instances alledged above. Heretofore, §. 960. when we treated of an inflammation of the bowels, we shewed, that the portion of the intestine, which is above the obstructed part was prodigiously distended, inflated, and dilacerated with a most acute pain. Now it was proved, §. 25 that too great a distension of a fibre, and such an approaches to a rupture thereof, leaves after it, and its effects, a great debility: and §. 1060. among the causes of a palsy, we enumerated a very great and lasting pain; as also, whatever by straining or distending the nerves, might injure them. It appears, therefore, that the fibres of the intestine may be so weakened by various causes, and the muscular action of their coats be so enfeebled, that they will yield to the expanding air, and thus be more and more dilated; as has been observed to be the case in persons subject to a tympany.

But although an acute pain often precedes a beginning tympany; when as this disease follows an inflammation, or at least very troublesome griping; when



When it is the consequence of some more mild disorder, as appears from the observations of *Hippocrates*; yet afterwards, when the intestines have for some time been violently distended, and are no longer able to contract themselves, the muscular fibres of the intestines being rendered paralytic, the pain ceases, in the same manner as after the most grievous pains of the rheumatism; a palsy coming on, the pain ceases; the nerves being destroyed, or at least so much changed by the disease, that they are become unfit for the exercise of their functions.

Hence also we understand why, when a tympany has reached its full growth, no flatulences break forth, no borborygms are heard: as also, why, if there be any room to hope a cure, it is a good sign for the patient to perceive borborygms; as they are a sign, that the intestines have not quite lost, or have recovered their tone; when such wind will be expelled in great quantity, and the swelling will presently subside, although it will return sometimes, till at last, proper remedies having restored the tone of the intestines, the abdomen subsides, and does not swell again.

We read<sup>w</sup> of a remarkable instance to this purpose: a girl of twenty-two years old, after a tertianague, which had been very ill managed, and had lasted seven months, took some doses of the bark; after which she began to feel acute pains in the loins and abdomen, which generally began near the right ilia; then they ascended, and, crossing the stomach, passed to the right side; they were accompanied with gripings and borborygms, the abdomen swelled, and sometimes increased to a very great size; and afterwards, without any evacuation having preceded, gradually subsided, but not so as ever to be wholly free from swelling: the following winter she was for some time free from these complaints; but

<sup>w</sup> Medical Essays, Tom. I. N<sup>o</sup> 31. pag. 296, & seq.

but in the beginning of the spring, the same symptoms returned, and the abdomen was always swelled and sometimes the swelling increased to such a size so as to give occasion to fear, that the abdomen would burst: at last, however, the tumour diminished gradually, without any evacuation; and there was perceived by the touch, something like balls bunching out in various places, especially in the side; the appetite was good, there was no thirst, and the urine was answerable to the quantity of liquor drank. Purges being given, the fæces were evacuated, but scarcely any flatulencies, and the swelling of the abdomen was but little altered: various remedies, internal and external, were tried, but with very little success; the belly was still costive, and no wind was expelled: at last she perceived rumblings and borborygms in the abdomen; some blood came out of her anum; (for she had before been subject to the hæmorrhoidal flux:) afterwards she broke wind upwards and downwards so violently, that no person in the same hospital were able to bear it; the swelling grew less, and became softer; the explosion continued; and although the swelling returned from time to time, she was so far recovered, by corroborating medicines, as to be able to bear hard labour: and her health continued entire afterwards, although she generally went bare-footed, worked hard, and lived on coarse food.

From the description of this wonderful disease, it seems to have been a tympany, in which the colon was dilated through its whole length. Those hard tumours undoubtedly proceeded from dry fæces; for had they been schirrus, so easy a cure was not to have been expected. When the distended fibres of the intestines had regained their tone, the wind was forcibly expelled, the abdomen subsided, the retained fæces were cleared away by purges and clysters, and health returned.



Nor does it seem impossible, that after death the  
nd may sometimes find a vent through the anus,  
d the abdomen, which had before been prodigi-  
ly swelled, may subside. *Ballonius* \* saw this hap-  
n, to his surprize, in the body of his mother-in-  
w, and of another lady, and says, *quum utraque hy-*  
*opica fuerit, & aqualiculus valdè distenderetur par-*  
*m aquis, partim flatu aliquo, postquam utraque ex-*  
*ecta est, ita resedit venter, ac si nunquam intumuisset;*  
whereas both these women were dropfical, and the  
lower belly was prodigiously distended, partly with  
water, partly with wind: after they were both  
dead, the belly sunk, and appeared as though  
there had never been any swelling." This tym-  
ny seems to have had its seat in the intestines; for  
it had occupied the cavity of the abdomen, and  
t in the alimentary tube, it seems scarce possible  
conceive, that the tumour should vanish after  
ath, without the integuments of the abdomen be-  
g burst.

From all these instances, it seems reasonable to  
clude, that the tympany frequently has its seat  
the stomach and intestines, particularly the intes-  
a crassa; nor does it appear, that we can altoge-  
er deny, that the tympany sometimes occupies the  
vity of the peritonæum: for observations related  
authors, who deserve credit, confirm this. And  
t I might not take up too much time in select-  
g instances to this purpose, I have selected a single  
e from *Ruyfch*, that skilful dissector, which was  
ade in the presence of *Heister* y, who certainly  
uld not easily be deceived in matters of this na-  
e. A woman, in the flower of her age, died sud-  
ly; and as her belly was greatly swelled, and  
e was thought to be pregnant, her parents and her  
sband were desirous that her body might be opened  
and

\* Epidem. & Ephemer. Lib. II. Tom. I. pag. 176. y Heister's  
dic. chirurg. und. anatom. Wahrnemungen. pag. 28.

and carefully examined, to discover whether were pregnant, or whether there were any concealed cause of death. When *Ruyfch*, with his usual care and dexterity, was beginning to open the abdomen, a very small puncture being penetrated into the cavity of the abdomen, air issued forth in great quantity, and with a noise, and the whole abdomen presently subsided; the womb was found empty, and shrunk up, the caul alone was putrified, the other viscera, both of the breast and of the abdomen, were found; nor could *Ruyfch* discover what way the air had gained admission into the cavity of the abdomen.

*Heister*, at seventy years of age, asserts, that abdominal tympany is exceeding rare; for although in the space of forty-six years, he had dissected many bodies of persons who had died of a tympany, he never found any air in the cavity of the abdomen, but it was always lodged in the distended intestine.

At this day we certainly know (as was shewn large in the chapter of flatulences) that air exists in incredible quantity, in the solids and fluids of the body; but so long as the air remains involved, and coheres with the constituent parts of the body, being divided as it were among the elements of the parts, it is not elastic; but when by increase of heat, or by the intestine motion of fermentation and putrefaction, that nexus and cohesion of the air with our solids and fluids is dissolved, the air regains its accustomed elasticity, and becomes easily dilated by the least increase of heat. Now as in this woman's body the omentum was found mortified, it is not difficult to conceive, why the abdomen was much swelled, and why the air, from a slight and small wound, burst forth with noise and violence.

This is the reason why, in diseases of the woman's kind, when there is an universal disposition to putrefaction, a tympany comes on, soon followed by death.



death. When we treated of the putrid continual fever, §. 735. we took notice, that death is at hand, the hypochondria are tense and inflated: thus also, in the comment on §. 1104. when we spoke of the overflowing of black bile, it was observed, that a bilious matter when it is putrified, (the vessels of the abdomen being burst) effused into the cavity of the abdomen, will produce a tympany; for the same reason, the bodies of drowned persons, after having lain some time under water, emerge again, and float upon the surface. At the same time we easily see, that the air may penetrate from the mortified intestines into the cavity of the abdomen; whence, when persons are dying of the iliac passion, the abdomen is inflated: for the same reason, if worms have bored through the intestines, an abdominal tympany may take place.

But as an intestinal tympany is much more frequently observed than a tympany of the abdomen, physicians generally think of this latter species: but there seem to be some signs, by which these two species of tympany may be distinguished from each other. For if after gripings of the belly and a pain of the loins, the abdomen be inflated, if there be frequent borborygms, and the belly be very costive, there is reason to suspect a tympany of the intestines: if these signs be wanting, and the inflated abdomen swells suddenly, this would lead one's thoughts to an abdominal tympany; and in this case, the sound of the abdomen from a blow would be stronger. This diagnosis receives a confirmation, if such causes have preceded, as gives reason to apprehend a putridity and mortification of the bowels.

But from hence also the reason is evident, why a tympany sometimes accompanies an ascites; if, to wit, the waters contained in the cavity of the abdomen begin to putrify, or if the viscera, by having been so long soaked in the fluid, are grown tabid.

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Monsieur *Du Verney* the younger<sup>z</sup>, saw an instance of this, and gives us the signs by which we may know when it happens. As air is lighter than water, it occupies the superior part of the abdomen; and when the belly is handled, a kind of lightness is perceived at that part where the water terminates, and a less degree of resistance, as if one touched a bladder filled partly with air and partly with water; when the posture of the body is changed, the place of the air and water is changed likewise. He observed besides, that when the operation of the paracentesis was performed, the discharge of the water was sometimes impeded by a bubble of air, which it was necessary to break with a hog's bristle, to restore the free course of the water. It is however evident, that in such a case the loss of the patient is to be feared, as the only hope in the cure of an ascites consists in the remaining soundness of the viscera.

Such a case is also described by Professor *Comboulusier*<sup>a</sup>, who pronounced concerning a woman while she was living, that she had a tympany conjoined with an ascites: and after death, he appeared to have judged right; for when the trochar was thrust into the abdomen, which was very prominent, the air presently broke forth with a filthy stench, and with such force, as to extinguish the flame of a lamp, and the middle part of the tumid abdomen subsided immediately. The abdomen being opened afterwards, there appeared a great quantity of a thickish fluid between a yellow or clay colour and a green, in which many hydatids swelled, some with a limpid liquor, and some with yellowish liquor, and of various sizes, as also some skins of hydatids, which had burst.

<sup>z</sup> Academie des Sciences, l'An. 1703. Memoir. pag. 185

<sup>a</sup> Pneumato-Patholog. pag. 33.



## S E C T. MCCXXVII.

**T**HE dropfy called the dropfy of the testicles, is divided into the following species :

1. A dropfy of the scrotum : (this belongs to . 1225.) it is discerned by the touch, by visible transparency of the swelling, and by an impression, the fingers being left after feeling it.

2. A dropfy of the bag, formed from the protrusion of the peritonæum in a true hernia : this happens in a very great ascites (§. 1226.) it is known by the symptoms of the ascites, or if the tympany having preceded ; by its disappearing, on pressure ; on lying on the back, and with the upper part of the body lower than the belly, or on the discharge of the water from the abdomen ; or by the frequent sudden increase or diminution of the swelling, without any manifest cause ; also by form of the swelling, resembling a sausage hanging down from the groin towards the scrotum.

3. A dropfy of the involucrium vaginale of the testicle : this happens, when the secreted fluid is not re-absorbed, but stagnates, accumulates, and frequently prodigiously distends the bladder in which it is contained ; or if it be accumulated, these having been extravasated from the ruptured, obstructed vessels : inflammations, suppurations, collections of ichor, often have the appearances of this species of hydrocele. It is known by the swelling not being elastic, not yielding to pressure, and being hard, and produced slowly ; by the absence of the symptoms of

of the 1st and 2d species of hydrocele; the form of the swelling being round, or least oval; by its visible transparence, if the scrotum be drawn tight round it, the dropical being exposed to the light of the candle, and viewed distinctly. Whether, besides these species of the hydrocele, there ever is a like tumour between the nervous coat and the substance of the testicle itself, is not certain from observation, and if there be, it can scarce be distinguished from the last-mentioned species, and perhaps can hardly be cured but by extirpation. The disorders are called (ὕδροκῆλαι) hydroceles.

Here follows a dropsy peculiar to the male sex, which is commonly called a dropsy of the testicle, although it seldom occupies the substance of the testicles themselves; but mostly lodges in their integuments, and principally in the scrotum. But this is also the common seat of hernias or rupture; hence if the scrotum be swelled with accumulated water, this disorder is also called a hernia; and to distinguish it from other hernias, the epithet watery is added: whence all these watery swellings of the parts, were called by the *Greeks* by the common name ὕδροκῆλαι.

But as such a collection of water may take place in different parts, it is worth while to investigate the seat of this disorder; as a different method of cure may be requisite, according to the different part occupied by the water. Hence *Celsus* <sup>b</sup>, treating of these diseases well observes, *signa autem quædam communia sunt quædam propria. Communia quibus humor deprehenditur; propria quibus locus*: “some symptoms are common, and  
“ other

<sup>b</sup> Lib. VII. Cap. xviii. pag. 458.



others peculiar : those are common, by which we discover that water is collected ; and those are peculiar, by which we find the place it occupies." Hence it is necessary to treat of the different species of this disease.

1. The first is properly an anasarca of the scrotum, or a collection of water in the cellular membrane of this part ; so that all that was said §. 1225. is applicable here. For under the skin of the scrotum<sup>c</sup> lies a very thin cellular membrane, in which are fixed the bulbous roots of the hairs ; under this cellular membrane lies a hollow cutaneous muscle, called the dartos ; most of the fibres whereof pass through this cellular membrane, and adhere strongly to the skin. The concave part of this cutaneous muscle is also lined with a cellular membrane, somewhat thicker than that which is placed between this muscle and the skin ; so that, properly speaking, the dartos muscle lies between two cellular membranes. But as an anasarca has its seat in the cellular membrane, the disease may be conceived as occupying either of these membranes ; but as they are exceeding thin, they never naturally have any fat (they are filled with fat only in castrated animals) ; a slender, hollow, cutaneous muscle is interposed between them : there is no doubt but that these two cellular membranes communicate with each other, through the interstices of the fibres of this muscle ; and therefore both together may be distended with accumulated water in this disease, which is called an anasarca of the scrotum. The seat therefore of this dropsy is in that space, which lies between the skin and the tunica vaginalis, of which hereafter ; and it occupies both these cellular membranes.

Celsus seems, in some manner, to have been aware of a distinction in this case<sup>d</sup> ; for he says, *ac ne ei eundem humori qui inter tunicas est, una sedes est. Nam*  
VOL. XII.                      A a                      modo

<sup>c</sup> Winslow Exposition Anatomique Traité du bas Ventre, N<sup>o</sup> 3, & seq. pag. 562.                      <sup>d</sup> Lib. VII. Cap. xviii. pag. 457.

*modo inter summam & mediam, modo inter mediam & imam consistit*; “nor is the seat of that water which  
 “is between the membranes, always the same; for  
 “sometimes it lodges between the upper and the  
 “middle membrane, and sometimes between the  
 “middle membrane and the lowest.” Now an anasarca of the scrotum seems to be the same disease with the hydrocele of *Celsus*, in which the fluid is collected between the upper and middle membrane that is, between the skin and the tunica vaginalis for thus he speaks afterwards<sup>c</sup>, *si inter summam mediamque tunicam est cum digitis duobus premimus, paulatim humor inter eos revertens subit, scrotum remissus est & albidius; si ducitur aut simul aut paululum intenditur testiculus ex parte neque visu neque tactu sentitur*; “if  
 “the water be lodged between the upper and middle  
 “membrane, when we press the swelling with two  
 “fingers the water by degrees slides between them  
 “the scrotum is more lax and whiter, and if it be  
 “pulled up, it is stretched either not at all or but  
 “little, and the testicle on that side is not perceived  
 “able, either by the sight or touch:” for the skin of the scrotum, when the tunica vaginalis will not wrinkle as it does in healthy robust persons.

Many authors, who have written concerning this disease, have multiplied the species of the hernia aquosa; for they considered that water might be lodged, not only between the tunica vaginalis and the testicles, (of which hereafter, N<sup>o</sup> 3.) but also between the tunica vaginalis and the dartos muscle. Now it appears, from the observations of that accurate anatomist *Winslow*, that a considerable cellular membrane lies between the tunica vaginalis and the dartos muscle; the collected fluid may be more likely to cause an anasarca in this place, as this cellular membrane (as we noted above) has a communication with another similar membrane, placed between the skin and the dartos muscle: this slender muscle will

<sup>c</sup> Lib. VII. Cap. xviii. pag. 458.



be almost imperceptible, between these two distended membranes; nor does the dartos muscle seem so firm, as that the water should be lodged between it and the tunica vaginalis, as in a hollow bag. The observations of that excellent surgeon Mr. *Sharp*, on this matter, are well worthy to be read<sup>f</sup>. If, however, the collected fluid be either naturally acrid, or rendered such by long stagnation, it does not seem at all impossible that the cells of this membrane may be eroded, and that by this means the collected fluid may no longer occupy separate cells, but be lodged in a larger cavity. But so long as these cells are entire, this will not easily happen from the weight and quantity of the collected humour, as it does not urge with its whole mass at once, but is lodged in separate cavities, as professor *Bertrandi*<sup>g</sup> has well observed. This seems to happen, when from a stone lodging in the bladder, or from any other cause, the excretion of the urine is impeded; then by the perpetual violent efforts to discharge the urine the urethra is burst, and the urine diffuses itself through the substance of the scrotum and of the penis<sup>h</sup>. I have seen this happen to a youth, who after several gonorrhœas very unskilfully treated, had the passage of the urethra almost entirely stopped up with caruncles, and the urine had filled the whole cellular membrane of the scrotum, and afterwards had eroded the skin in such a manner in several places, that almost the whole quantity of urine issued through these holes, and scarce any from the urethra. When a universal anasarca occupies the habit of the body, it is not at all strange that the cellular membrane of the scrotum should also be filled with water. However, this disorder has been observed to infest the scrotum more than other parts. A surprising case is related<sup>i</sup> of a

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<sup>f</sup> A critical enquiry into the state of surgery.  
le Chirurgie, Tom. III. pag. 85, & seq.  
and observations, Tom. V. pag. 300.  
Novemb. pag. 492.

<sup>g</sup> Académie

<sup>h</sup> Medical essays

<sup>i</sup> Act. Erudit. 1725,

man, who having several times been troubled with an erysipelas of the scrotum, and of the feet, at last began to labour under an anasarca of these parts, being in other respects tolerably healthy. Both the scrotum and penis had swelled to a prodigious size, insomuch that the scrotum increased in its dimensions every way, hung down to the knees, and being cut off, weighed together with the penis forty pounds. The skin of these parts was much altered from its natural state, being thrice as thick as in common; but the remaining substance of this monstrous mass, was *composita ex innumerabilibus cellulis loculisque, quibus, velut intra totidem sacculos membranaceos, spissus & gelatinosus continebatur humor, qualem etiam in tumore pedum, cute hinc inde incisâ, observavimus. Proinde hoc tenace latice, totum scrotum, & penis involucrum repletum deprehendimus, nec alias cavitates in isto invenimus, nisi eas quibus testes, naturalibus multo majores, concluderentur*; “ it was composed of innumerable little  
 “ cells and cavities, in which, as in so many mem-  
 “ braneous bags, was contained a thick gelatinous hu-  
 “ mour, the like to which we also found in the  
 “ swelling of the feet, the skin being cut in various  
 “ places. With this viscid humour the whole scro-  
 “ tum and the integuments of the penis were filled;  
 “ nor did we find any other cavities, except those in  
 “ which the testicles, much increased beyond their  
 “ natural size, were contained.” This wonderful instance confirms what we have said above; to wit, that a vast quantity of fluid may be contained in the cells of this membrane, without destroying the membranes of these distinct cells, and forming one large cavity.

As now the spermatic arteries and veins, together with the vas deferens, contained in what is called the spermatic chord, are arranged in the cellular membrane and supported by it, a similar accumulation of water may also happen here, as has been observed by

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professor *Monro*<sup>k</sup>. Then a soft oblong tumour is perceived in the spermatic chord, which is diminished, and even sometimes disappears on pressure: the form of it alters, according to the different situations of the body: if, for instance, the patient lies down in an horizontal position, and the scrotum be held up, the swelling appears oblong, and almost of the same thickness from the ring of the abdomen quite to the top of the testicle; but if the patient stand erect, and the scrotum be pendulous at the same time, a greater swelling appears in the lower part and a less in the upper. Nay, sometimes also the cells of this membrane, being gradually more and more distended, are changed into encysted tumours, which being kept in by the cremaster muscles acquire an oblong figure, and may easily be felt: but the testicle is manifestly perceived under this kind of tumour. Practical observations are related, by which what we have just said is confirmed.

2. It is known that hernias of the groin and scrotum are never, or very rarely, caused by a rupture of the peritonæum, but only by the peritonæum being stretched and extended into a hollow process, which contains a part of the intestine, or of the omentum. Such a bag of the peritonæum will still more easily receive into itself the water contained in the abdomen; as also the air contained in the cavity of the abdomen, when the patient has a tympany. But when the hernia is reduced, and the place supported by a truss, lest the intestine or the omentum should slide down, this process of the peritonæum still remains pendulous in the scrotum; and if there be water in the cavity of the abdomen, it may easily make its way under the truss which supports the groin, and fill the bag of the hernia. Nay, it has sometimes been observed, that although the omentum and the intestine were still lodged in a large bag of the her-

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nia,

<sup>f</sup> Medical essays and observations, Tom. V. pag. 305, & seq.

nia, yet there was besides a great quantity of water. Thus *Monro*<sup>1</sup>, from the bag of a hernia of long standing, drew out six pints of limpid serum; after which he could easily distinguish by the touch, the windings of the intestines, and the unequal surface of the omentum, which constituted the hernia.

It sometimes, although but rarely happens, after the hernia is reduced, that the upper part of the bag closes, so as not to admit any more of the prolapsed intestine or omentum; but yet a small opening remains, sufficient for letting in water flowing down from the abdomen. This was observed by that celebrated surgeon *Saviard*, in the body of a woman who died of an ascites, who had also had a hernia, and a swelling in the groin<sup>m</sup>: there was a bag of the hernia, which, by a very small opening, admitted part of the serum floating in the abdomen. We read of a like case elsewhere<sup>n</sup>, in which the author notes, that there was found such a bag of the hernia full of water, whose orifice communicating with the cavity of the abdomen, was entirely closed.

But this species of hydrocele is chiefly to be known, from a hernia having preceded, and an ascites being actually present: for, as *Mr. Sharp*<sup>o</sup> has excellently remarked, an ascites alone will not fill the scrotum with water; and he appeals to all practitioners, whether they ever saw any persons in an ascites, who had an hydrocele at the same time, unless they had a rupture before. I confess, that I have seen many persons in an ascites, and although the abdomen was greatly distended with water, I never found that the water had made itself a passage into the scrotum, unless a hernia had preceded.

<sup>1</sup> Medical essays and observ. Tom. V. pag. 315. <sup>m</sup> Nouveau Recueil d'Observations Chirurg. Observ. xxii. pag. 120.  
<sup>n</sup> Le Dran Traité des Operationes de Chirurg. pag. 184. <sup>o</sup> A critical enquiry into the present state of surgery, Cap. ii. pag. 72.



It is easy to understand, that such an hydrocele having a communication with the cavity of the abdomen, may disappear upon pressure; may be diminished by a supine posture of the body; if the cavity of the abdomen be not entirely filled with water, may increase; and when the patient stands upright; and the watery tumour itself may resemble in figure, a sausage, as the bag of the hernia being full, is of such a form.

It has been observed<sup>p</sup>, that the bladder stretched out into a process, may get through the ring of the abdomen into the scrotum, and cause a hernious swelling; and when distended with urine, it may deceive unskilful persons by its resembling an hydrocele. But as this generally happens after the urine has been retained a long time; and on pressing such a tumour, the urine comes out by the urethra, and the swelling is considerably diminished, or even sometimes totally disappear; it should seem not very difficult to distinguish a hernious bag filled with urine, from an hydrocele; especially as this disease is now much better known than heretofore, when such a disease as a hernia of the bladder was scarce thought of. But as this is not the place for treating of this disease, we refer to what is contained in the *Academie des Chirurgie*<sup>q</sup>, where the best observations relating to this disease may be found.

3. This is the third and most frequent species of the hydrocele: so that Mr. *Sharp* seems to reckon this the only one, besides the anasarca of the scrotum<sup>r</sup>. In this case, the water is collected in the membrane called the tunica vaginalis testis, which is a continuation of that coat which wraps up the spermatic chord; for when this vagina approaches, the testicle is gradually dilated more and more, and consists as it were of two membranous sheaths, of which

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<sup>p</sup> Academ. des Sciences L'An. 1713. Mem. pag. 147. <sup>q</sup> Tom. II. pag. 1, & seq. <sup>r</sup> A critical enquiry into the present state of surgery, pag. 65.

one includes the other, so as that the external sheath is longer than the internal; and there is an interstice between the bottoms of the two sheaths, in which interstice is placed the testicle: the internal coats make the bottom of the membrane which wraps round the spermatic chord, and adhering thereto forms a partition, which intercepts the communication between the vagina of the spermatic chord and the tunica vaginalis of the testicle, which is a continuation of the external membrane, and is dilated round the testicle<sup>s</sup>. Water, therefore, may be collected in the sheath of the spermatic chord, of which we spoke before; but that species of hydrocele, of which we now treat, is formed in the cavity of the tunica vaginalis, which surrounds the testicle. *Kaau*<sup>t</sup> says, that the internal surface of the tunica vaginalis, as also of the testicle and epididymis, perpetually exhale a subtle dew, which, being collected and condensed after death, exhibits a considerable moisture; which *Sharp*<sup>u</sup> attests he has always found here. We read of a surprizing case described by professor *Monro*<sup>x</sup>, of a healthy old man, in whom a tumour of the scrotum was grown to such a size, that it was necessary to prick it, as he would not allow the bag to be cut off for a radical cure. Some months after the bag, as is usual, filled again: he deferred the puncture for two whole years; and then the scrotum swelled, not only in the upper, but also in the lower part; nor could the testicle be any longer felt: outwardly there appeared a different line quite cross, which divided the swelling into two parts: when the lower part was pressed by the fingers, no fluctuation was perceived in the upper part; the scrotum being pierced in the lower part, several ounces of water came out; but the upper part of the swelling

<sup>s</sup> Winslow *Expositum Anatom. Traité du bas Ventre*, N<sup>o</sup> 515, 516, 517. pag. 564. <sup>t</sup> *Perspirat. Hippocrat.* pag. 313, 314. <sup>u</sup> *Critical enquiry into the present state of surgery*, pag. 66. <sup>x</sup> *Medical Essays*, Tom. V. N<sup>o</sup> 21. pag. 310, & seq.



Swelling did not subside: after some days a fever, accompanied with an inflammation and suppuration in the lower part of the scrotum, followed; and the swelling growing ripe, on cutting the place, twelve ounces of pus came out; and it evidently appeared, that this pus was collected in the tumefied substance of the testicle itself. After ten days, the dressings were observed to be wetter than usual, and on taking them off, limpid water came out by drops, and the upper part of the swelling was diminished; and the same dropping continuing, the swelling entirely disappeared, the wound was healed, and the hydrocele never returned.

This instance seems to shew, that the water was lodged in the sheath of the spermatic chord, and hence arose the swelling in the upper part of the scrotum: but afterwards a like collection of water took place in the tunica vaginalis of the testicle, and the water being evacuated thence, the bottom of the sheath of the spermatic chord (no longer supported by the water collected in the tunica vaginalis) breaking, made a passage for the contained water to issue forth.

But as a great and constant perspiration prevails here, that the testicle may be continually fermented with a mild steam; if re-absorption be hindered by any cause, the water will insensibly be accumulated; and the tunica vaginalis may gradually be distended to a prodigious size, as frequent instances confirm: and the same thing may happen from a rupture of the lymphatics, as was shewn before, when we enumerated the various kinds of dropsies. I once saw a man of sixty years old, who, while he was making water in the street, his foot slipped: he immediately felt an acute pain in the right side of the loins, but it quickly passed off; soon after, an hydrocele was formed on the same side, increasing very fast, so as soon to require puncture. It seems probable, that  
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the hydrocele, in this case, arose from a rupture of the lymphatics.

We should be careful, that we do not mistake other tumours for an hydrocele; which will scarce happen, if we give sufficient attention: for inflammatory tumours of those parts are easily distinguished by the heat, redness, pain, and fevers accompanying them. Purulent and ichorous tumours are known by inflammation or other causes having preceded and require a discharge of the collected humour, as well as the hydrocele, lest the evil should be increased by the delay. Sometimes also the testicle swelled, from a bruise or other causes, and becomes hard and rough, and increases to a vast size. This disease is called a sarcocoele; which, however, is easily distinguished by the touch, from an hydrocele. Sometimes, when the testicle is thus disordered, an hydrocele follows, which, if it grows to a great size, may hide the swelled testicle, so as that it cannot be felt; then the disorder is compound: and the history of the disease will shew, whether the swelling of the testicle preceded the hydrocele. If an exact description of the disease cannot be obtained, on account of the unskilfulness of the attendants or patients, puncture may be cautiously used, so as not to injure the testicle; as will be said hereafter, §. 1252. when we treat of the paracentesis of the scrotum.

This disease is then only known, when it manifests itself by a swelling; for the very beginning, when a small quantity only of serum is collected in the tunica vaginalis, cannot be discerned: for this tumour is not elastic, and does not yield to the pressure of the fingers and rise again, as in an anasarca of the scrotum; because the fluid is not lodged in the cellular membrane, but in the tunica vaginalis of the testicle. This distinction is more certain, if the symptoms of the first and second species of the hydrocele before enumerated are wanting. As the cavity of the tunica vaginalis is nearly round, it will have the same



figure when it is dilated; but as the tunica vaginalis becomes narrower towards the upper part, hence it may, when quite filled, be of an oval figure. Although it may happen, that on an increase of the quantity of water, this upper part often may be so dilated, as that the whole may be round; but as both the tunica vaginalis, and the integument of the scrotum when much distended, are attenuated by the distension, on this account the bag in which the collected fluid lodges will be transparent enough, especially if the scrotum be drawn up cautiously with a soft broad linen rag, that the tension may be increased. But the water contained in such an hydrocele is most commonly limpid, and therefore the whole swelling will be transparent, if a lighted candle be held on the opposite side, so as that the testicle may easily be seen lodging in the middle of the swelling, and care may be taken in performing the operation of the paracentesis, not to hurt it with the point of the trochar.

This diagnostic is confirmed by Celsus<sup>y</sup>, who speaks thus; *tumor mollis est si non nimius humor subest, at si vehementer increvit, resistitur sicut uter repletus & arctè astrictus: venæ quoque in scroto inflantur; & si digitis premimus cedit humor, circumfluentque id quod non premitur attollit, & tanquam in vitro cornuve per scrotum apparet, isque quantum in se ipso est sine dolore est;* “the swelling is soft if there be not too much water;” “but if that be increased to a great quantity, it resists to the touch like a bladder filled and bound tight: the veins also in the scrotum are inflated; and” “if we press the part with the finger the fluid gives way, and fluctuating raises the part which is not prest; and it is visible through the scrotum, as if it were in a case of glass or horn, and” “is without pain in its own proper substance.” Then after he has added the symptoms by which the first species of hydrocele is distinguished, he goes on; *at si sub media tunica est, intentum scrotum magis se attollit*

<sup>y</sup> Lib. VII. Cap. XVIII. pag. 458.

*tollit, adeo ut superiör coles sub tumore deliteſcat*; “ but  
 “ if the water be collected under the middle coat  
 “ the diſtended ſcrotum riſes higher, ſo that the  
 “ penis above it is concealed under the tumour.  
 But it is to be noted, that the fluid collected in the tunica vaginalis is ſometimes not transparent but morbid and bloody; which is uſual in an old hydrocele when the collected fluid by long ſtagnation begins to degenerate, and the corroded or macerated veſſels let out the blood: the tumour then is not transparent and greater caution is requiſite in performing the operation of the paracenteſis of the ſcrotum.

Befides the ſpecies of the hydrocele already enumerated, ſome have thought that a watery fluid might be collected between the ſubſtance itſelf of the teſticles and their peculiar membrane, which is called the nervous or albugineous membrane, and which is very ſtrong and firm, and moſt cloſely adheres to the ſubſtance of the teſticles. Nay, *Winſlow*<sup>z</sup> is of opinion, that thoſe membraneous cells in which the ſecretory veſſels of the teſticles are contained and arranged, are proceſſes of the albugineous membrane which wraps up the teſticle. Whence it eaſily appears, that a fluid cannot be ſo well collected, and if it were collected thus, the albugineous tunica cannot be diſtended or divided from the teſticle, without the entire ſubſtance itſelf of the teſticle being deſtroyed which muſt alſo happen, if a dropsy were to be formed in the ſubſtance of the teſticles themſelves. Profeſſor *Bertrandi*<sup>a</sup> well remarks, that no obſervations are extant, by which the exiſtence of a dropsy of the teſticles is ſo clearly demonſtrated, as remove all ſuſpicion of the waters being lodged in ſome other ſeat. Beſides he obſerves, that in thoſe caſes in which this diſeaſe was ſuppoſed to exiſt, there flowed forth a tumour of ſuch a kind, as ſhewed that a putrid diſſolution.

<sup>z</sup> Exposition Anatomique Traité bas Ventre, N<sup>o</sup> 486. pag. 561.

<sup>a</sup> Académie de Chirurgie, Tom. III. pag. 101.



tion, or a real suppuration of the testicle, had preceded.

Certainly an hydrocele of this kind could scarcely be distinguished from the preceding species, wherein the water is collected in the tunica vaginalis, unless perhaps by a most violent pain in the beginning of the disease; that is, the albugineous tunic begins by a slow separation to be divided from the substance of the testicle. But as this cannot happen, unless the structure of the testicle be at the same time destroyed, extirpation is the only way left for a cure. It is indeed certain, that the testicles have been found macerated, and in a manner dissolved in the water, in an inveterate hydrocele; but there is no certain proof of a real dropsy of the testicles themselves.

### S E C T. MCCXXVIII.

It has been observed, that all these diseases are produced from every cause which is capable, 1<sup>st</sup>, So to stop the serous fluid that it cannot return into the veins, but shall stagnate in the distended vessels: 2<sup>dly</sup>, To burst the vessels themselves in such a manner, as that the serum shall be extravasated between the membranes: or, 3<sup>dly</sup>, So to obstruct the vessels which take back the exhaled fluid from the cavities, and to raise so slow a motion of the fluids deposited in the cavities, that they shall neither be exhaled nor re-absorbed.

After all the various species of dropsies have been enumerated, it comes in course to treat of such causes of the dropsy as have been discovered by careful observations on this disease, or found in the bodies of dropical persons when dissected. The chief of these are enumerated in the following paragraph: but as they

they are so various and numerous, order requires that they be ranged into some more general classes; which will be the subject of the present section.

1. Physiology teaches us, that all the lymph which returns from any part of the body, passes through the lymphatic veins into those veins which carry back the blood, either immediately, or by first passing to the cisterna lumbaris, the ductus thoracicus, and so on to the subclavian vein. If therefore any cause obstructs the free passage of the lymph into the larger vessels, this fluid will stagnate in its own vessels and distend them, and the smallest absorbent veins will not be able to empty themselves; whence the re-absorption of the exhaling steam from the cavities of the body will cease, while at the same time the exhalation from the arteries into the same cavities continues, and therefore a dropsy will take place. Lower has demonstrated this by direct experiments on living animals<sup>b</sup>. Having pierced through the chest of a mastiff he bound the ascending vena cava, then he sewed up the wound; the animal grew faint presently, and expired in a few hours: *in dissecti abdomine magna serique quantitas innatare conspiciebatur, non aliter quam si ascites diu laborasset*; “on dissecting a dog, a great quantity of serum was found floating in his abdomen, just as if he had long laboured under an ascites.” He tied very tight the jugular veins of another dog; after some hours all the parts above the ligature swelled surprisingly, and in two days the dog perished as if suffocated with an angina: all the muscles and glands situated above the ligature were found greatly distended with limpid serum, and transparent. Here we see that ascites arose in a few hours, from an obstruction of the motion of the venous blood. In the body of a girl of eight years old<sup>c</sup>, who died comatose, and oppressed with a difficulty of breathing, from water being collected in the ventricles

<sup>b</sup> De Corde, Cap. II. pag. 123, & seq.  
Traité complet. de chirurgie, Tom. II. pag. 186.

<sup>c</sup> La Motte



ricles of the brain, the cavity of the heart was found full of watery serum a little tinged with red, but a perfectly limpid humour was found in the brain. When the dissector had quite freed the breast from the contained humour, he found the lungs unimpaired; but he discovered two abscesses, and two hard fleshy tumours as big as a pigeon's egg, which compressed the descending trunk of the vena cava: and without doubt, they were the occasion of the accumulation of watery serum in the head and breast.

But how often do we see in pregnant women, if the distended womb presses the iliac veins, the legs and thighs are affected with a dropsical tumour, and sometimes even the parts of generation swell with a true anasarca: as soon as this compression of the veins ceases after delivery, the swelling often entirely disappears in a few days. Physicians of note, considering these and the like instances, have determined that the true cause of the excessive swelling of the body in a dropsy, and of the separation of the serum from the blood, is the passage of the blood through the veins chiefly being retarded<sup>d</sup>. Hence also we see the reason why in the beginning of a dropsy (as was observed in the commentary on §. 1230.) the feet first begin to swell; because gravity increases the difficulty of the return of the blood through the veins in the lower limbs, especially in those who live a sedentary life, and scarce use any motion. Whence also, tall men are thought to be more liable to dropsies than others<sup>e</sup>, for the difference of stature depends, principally on the greater or less length of the legs and thighs; for the distance from the top of the sternum to the os pubis, does not vary considerably in men of different stature, as the viscera of the thorax and abdomen require nearly the same space in all men; but the difference of stature depends chiefly on the different

<sup>d</sup> Frid. Hoffm. Med. Rat. System. Tom. IV. Part. iv. Cap. xiv. pag. 431.

<sup>e</sup> Ibidem, pag. 436.

rent length at the head and neck, and above all of the lower limbs.

In tall men therefore, the venous blood has a long way to ascend against the resistance of gravity, and therefore, *cæteris paribus*, the feet of such person will most easily swell. Professor *de Sauvages*<sup>f</sup> has excellently remarked, that the fluids in a healthy state have a certain degree of viscosity by which they adhere to the sides of the vessels; and by this the force of gravity is lessened, when they are to ascend almost perpendicularly. If now such a cachexy has arisen as that firm good blood is no longer produced, but the fluids degenerate into a watery thinness, this adhesion to the sides of the vessels is diminished, the power of gravity continuing the same; wherefore in this case, the lower limbs will easily swell.

We may equally understand from hence why, in any obstruction arises near the right venous sinus, in the pulmonary artery, or in the lungs themselves, so as that the free passage of the blood through this viscous be impeded, there is room to apprehend a dropsy for the two trunks of the vena cava cannot, on this supposition, empty themselves freely; whence the motion of all the venous blood will be retarded. Hence it so often happens, that persons afflicted with polypous concretions about the heart and the large vessels, die dropfical; for the same reason, asthmatic persons often become dropfical; which *Aretæus*<sup>g</sup> when he is treating of this disease, remarks: his words are, *nonnulli ex his celerius suffocati sunt, cum aliquod deterius omne corpus invaserit: nonnullis vero in hydropem circa ilia aut in eum qui anasarca dicitur desinit*; “some patients in this disease perish soon, when  
“ some violent disorder attacks the whole habit: in  
“ others, the disorder terminates in an ascites or an  
“ anasarca;” and *Aetius*<sup>h</sup>, although according to the

<sup>f</sup> Dissertation sur les Medicamens, pag. 12.  
& sign. morb. diuturn. Lib. I. Cap. xii. pag. 41.  
Cap. xx. pag. 233.

<sup>g</sup> De causis  
<sup>h</sup> Serm. X.



the opinion which prevailed in his time, he says, *circa hepatis refrigerationem impossibile est aquam congeri*; “unless the liver become cold, it is impossible the water should stagnate;” and consequently ascribes all dropfies to the cooling of the liver: yet soon after he adds what follows; *novimus etiam quosdam qui ex rectâ spiratione quam orthopnæam vocant inquam inter cutim sunt deducti*; “we have known some whom have fallen into a dropfy from that kind of asthma, in which the patient can scarce breathe but in an erect posture, and which is therefore called an orthopnæa.”

Nor is it strange that the ancients should imagine disorders of the liver to be the causes of all dropfies, as this viscus is so frequently found impaired in the dead bodies of dropfical persons; the ascending trunk of the vena cava passes through the liver, and the vena porta is distributed through the whole substance of this viscus. Any tumour being formed in this viscus, may therefore impede the return of the venous blood. But the obstacle to the free motion of the blood through the veins being removed, the extravasated liquid may be re-absorbed, and so re-absorbed be evacuated by the proper channels from the body. Whence *Hippocrates*<sup>i</sup> says, *ab hydropse detento aqua secundum venas in ventrem fluente solutio*; “a dropfy is cured when the water passes through the veins into the belly;” which passage he took notice of on another occasion, §. 719.

2. If the free motion of the venous blood be impeded, the lymphatics continue distended; if this distension be increased they may burst, and effuse their contained liquid into cavities. It is true indeed, that many authors deny this cause of a dropfy; and others think it is very seldom, if ever the cause of this disease<sup>k</sup>. *Lower*<sup>l</sup> found in sheep, who had died

VOL. XII. B b of

<sup>i</sup> Aphor. 14. Sect. VI. Charter. Tom. IX. pag. 255. & Coac. prænot. N° 461. Charter. Tom. VIII. pag. 879.

<sup>k</sup> *Monro*, in essay on the dropfy, pag. 20.

<sup>l</sup> *De Corde*, Cap. 11. pag. 24, 125.

of a dropfy of the breast and abdomen, the lymphatics full, and even turgid; infomuch that he recommends fuch bodies to anatomifts preferably to others for moft eafily demonftrating the lymphatics: but this could not be, if the lymphatics were but one. However, if it be confidered that the thoracic duct has been broken, which is the largeft veffel that conveys lymph, and is hence reckoned as it were the vena cava of the lymph, there feems no reafon to prefume that the fame thing fhould not fometimes happen to the fmaller lymphatics. Nay, the far ingenious author<sup>m</sup>, who had denied that a dropfy ever proceeded from a rupture of the lymphatic, relates a cafe of a man, from whose thorax a large quantity of chylous fluid was evacuated, in whose body the thoracic duct was found perforated near the third or fourth vertebra of the thorax: and when living animals he tied up the thoracic duct, he confeffes that he fometimes found the receptaculum chyli, or fome of the larger lacteals, burft. But difeafes might produce the fame effect, as followed; from the ligature of a boy of two years old, after a peripneumony which had been improperly treated, remained fickly, with a cough and a difficulty of breathing for a year; then a quotidian intermittent came on with a dropfical fwelling of the abdomen daily increafing, the cough and afthma increafed, an atrophy wasted the body, and the infant patient funk at length under fo many ills; but the face kept its bloom, and the appetite was good to the hour of his death. *Monro*<sup>n</sup> foretold his friends they would find his diforder *effe verum hydropem chylofum factum a depluvio chyli in cavitates abdominis per vafa lactea ex accidente aliter rupta*; “to be a true chylous dropfy, from the  
“ chyle being extravafated into the cavity of the abdomen, the chylous veffels by fome accident being  
“ burft:” for he had feen, on performing the pa-

cente

<sup>m</sup> *Monro*, an effay on the dropfy, pag 22.  
Lib. I. Cap. x. pag. 21.

<sup>n</sup> *Phthifiologia*



entesis on the boy while alive, that there came out *urimas libras chyli lactescentis dulcis qualis in ipso ductu chyliifero reperitur*, “several pints of sweet milky chyle, such as is found in the chyliferous duct.” On opening the body he found the lungs in a sound state; *nisi quod in postica parte pone trachæam glandulæ apparerent admodum numerosæ, eæque satis insignes & duræ, egregiam pressuram super ipsum ductum thoracicum facientes, fere quâ parte venam subclaviam pertineat; rantque adeo insignis ponderis & molis, quod ob pressuram super ductum inde factam, ac si a fascia injecta, difficile admodum videbatur si omnino impossibile, ut chylus se in sanguinem trajiceret*; “except that on the back part of the thorax, behind the aspera arteria, there appeared a great number of glands, and of a considerable size and hard, which caused a great pressure on the thoracic duct, nearly in that part where it joins the subclavian vein; and they were of so great a weight and size, that the pressure on the thoracic duct straitened it almost as much as if it had been tied up with a bandage, and made it next to impossible, that the chyle should pass from thence into the blood.”

If besides this we reflect, that the lymphatics have very thin coats, and even when filled with their proper fluid are so transparent, as to escape the sight of superficial observers; and besides, that these vessels are of no very inconsiderable size, so that (see §. 215.) there has been found in the kidneys a trunk of a lymphatic, half as thick as the quill of a pen; will appear that it is far from impossible that such tender vessels, turgid with their contained fluid, may sometimes burst and effuse the lymph, and afterwards continually distil it drop by drop, that this may produce a dropsy; for a very great quantity of lymph may issue from the wounded lymphatics. This Ruysch<sup>o</sup> confirms by an instance. A surgeon had opened a venereal bubo before it was ripe, and un-

B b 2

happily

happily cut a lymphatic, from whence such a quantity of lymph issued daily, as to wet the rags upon the wound. Dressings being put under the part affected, and kept tight with clasps, the motion of the lymph through the ascending lymphatics was obstructed, and this discharge was stopped. I have sometimes seen a very troublesome oozing of lymph last a long time, consequent on bleeding in a vein, so that it appears that a rupture of the vessels may be reckoned among the causes of a dropsy, although the following cause be much more frequent.

3. We have already often remarked, that the greater and smaller cavities of the vessels in a living healthy man, were full of a very subtle steam which, on opening the abdomen of a healthy animal, reeks forth in a thick cloud, in winter time especially, and is dispersed in air. This vapour seems to be re-absorbed by the small veins before it condenses into water, as in living animals, although the whole surface of the viscera be indeed found moist. No fluid is found collected in the cavities till after death: for this dewy steam is exhaled with some force from the arteries, and the serum impetus seems to urge it inwards to the gaping mouths of the small absorbent veins. But if the vital powers, which urge on the circulation of the fluids, be languid, this vapour will issue less impetuously from the arteries, and be pressed less forcibly into the absorbent veins. Whence weakly constitutions are more liable to the dropsy, which seldomer attacks robust and vigorous persons. Whatever therefore weakens the tone of the vessels, disposes the body for a dropsy. Thus *Hippocrates*<sup>p</sup> observed, that when the prevailing constitution of the year was soft and moist from southerly winds, many persons fell into dropsies, for nothing more weakens the solids than a moist warm vapour; as was shewn heretofore, in treating of the diseases of the solids.

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<sup>p</sup> Epidem. Lib. III. Charter. Tom. IX. pag. 259 & 263.



Whenever the strength of the vessels is weakened they act less, or their contained fluid is diminished, and become less capable of converting the chyle into blood of a good and firm texture. Hence the red part of the blood fails in quantity; and as this part is the most dense, the whole mass of fluids becomes too thick, and the body grows cachetic; and if the too attenuated fluids are excreted from the body, a marasmus ensues; if they remain in the body, they are collected in its cavities, and bring on a leucophlegmatia or a dropsy, as was said in the commentary on §. 1170.

But as those bodies which have firm vessels and plenty of red blood, have also the greatest heat, they will be less obnoxious, *cæteris paribus*, to dropsies, and rather incline to acute inflammatory diseases: but when this heat is diminished, the exhaling steam will condense into a watery fluid, will fill the cavities, and with difficulty be re-absorbed. Hence we so often find the thighs and legs of dropical persons as cold as marble; and therefore, as will be said hereafter, when we treat of the cure of this disease, physicians lay so much stress on frictions of the parts which are swelled, not only to put the stagnating humours in motion, but also that the heat arising from frictions may rectify the extravasated fluid again into a steam, and render it more easy to be re-absorbed. Before, §. 44. when we treated of the diseases of lax and weak viscera, it was remarked, that the force with which the small orifices of the veins imbibe the effused fluid from the cavities of the body, increases or decreases in proportion to the strong or languid circulation of the blood. It was noted at the same time, that in extreme languors the evacuating power of the arteries seemed to last longer than the absorbent power of the veins; for which reason there is almost found some quantity of a fluid in the cavities of the body after death.

But when water abounds too much in the fluid and is not exhaled from the body through the pores of the skin, or by the urinary passages, its quantity increases perpetually, and that of the other fluids diminished.

Thus we see in a confirmed dropsy, that the abdomen and the lower limbs swell prodigiously, while the upper parts shrink and waste away, and the sanguiferous vessels contain but little blood, so as that their sides almost collapse.

But there is another cause, from whence the superfluous fluids are effused into the cavities of the body, and give rise to a dropsy. At the first view it should seem that water, which is thinner than the red blood, should easily pass from the extremities of the sanguiferous arteries into the veins: and thus Dr *Hales*<sup>a</sup> thought that warm water injected into the arteries, would thoroughly wash out all the thickest blood from all the blood-vessels, as well from the veins as from the arteries; but the event did not answer his expectations, for the water did not return by the veins, but escaped through those small arteries through which the red blood could not pass into the void interstices of the cellular membrane; and compressed by its weight the neighbouring arteries, and still more the veins which made less resistance to it. He concludes from this experiment, that the last order of capillary sanguiferous arteries had so great contractile power, that their extreme orifices could not be kept open by the water flowing through the vessels, but required a circulation of an uninterrupted series of red globules to keep the passage open from the extremity of the arteries, into the vein which lay contiguous to it. Elsewhere<sup>r</sup> he has demonstrated that it is not sufficient for life, that the arteries and veins remain full of water after the blood is let out for hereupon the animals died. At the same time

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<sup>a</sup> *Hæmæstat. Exper. XX. pag. 143, & seq. XIV. pag. 114, & seq.*

<sup>r</sup> *Ibid. Exper.*



when he persisted to inject water through a tube fixed to the carotid artery, although the jugular veins were cut longitudinally, the water did not issue freely by these apertures, but all the parts of the body began to swell, and an universal dropsy took place; the lungs were distended, all the muscles grew turgid, all the interstices between their fibres being filled with water; yet the water was not propelled through the arteries with a greater force, than the power of the heart in its natural state.

Hence therefore we see the reason, why the increase of water alone, in proportion to the other elements in the blood, may dispose the body to a dropsy.

But when the water in the cavities of the body comes to such a quantity, as that it begins greatly to distend the containing membranes, it is then scarce possible that it can be rarefied so as to become again a vapour; sometimes by long stagnation it grows as thick as a jelly, and thus can by no means be reabsorbed. Besides, when the veins are beyond measure distended by the collected water, although it may perhaps be thought, that at the same time the orifices of the absorbents are equally dilated, yet the ramifications of the veins are so much compressed by the surrounding fluid, that they can longer transmit any thing, and by this means the difficulty of reabsorption will be increased. Add to this, that in a dropsy of long duration the sides of the cavities, in which the fluids are lodged, become incrusted with a slimy matter, by which the mouths of the veins are stopt up. This has often been observed, more especially in the encysted dropsy, as dissections have shewn, and we have remarked before.

These are the three most general causes of a dropsy: it now remains that we consider those morbid changes of the body, which usually precede one or more of these, and thus give rise to the dropsy consequent upon them.

## S E C T. MCCXXIX.

**W**HICH causes have been found by observation such as follows. An hereditary disposition to this disease. Too sudden and copious drinking of cold liquors, without the being evacuated from the body by vomit or stool nor by sweat or urine, excited by warmth or motion. Acute diseases, especially those in which the heat is intense; whether they be accompanied with an insatiable thirst and greedy swallowing of drink, or they be without these circumstances. A dysentery coming on in diseases of the spleen and lasting long. All obstinate obstructions of the viscera, such as schirruses of the liver, spleen, pancreas, mesentery, kidneys, uterus, intestine. The jaundice. A violent and obstinate quartan ague. A lenteria. A diarrhœa. A dysentery lasting a long time. The cœliac passion. An empyema. A phthisis. The gout. All excessive evacuations, especially of arterial blood. Drinking acrid, fermented liquors. Eating hard viscid, tough aliments. Large and numerous hydatids, pendulous in the cavity of the abdomen. And many like causes, such as melancholy, the scurvy, &c.

An hereditary disposition, &c.] It is evident, from a variety of instances, that diseases descend sometimes from parents to their children; as was observed on another occasion, §. 1075. therefore it will not appear strange, if children sprung from dropfical parents have reason to apprehend the same disorder themselves; and, according to the usual effects of fear of future evils, that they should eagerly snatch



at vain remedies. Hence, as we mentioned when we treated of the phthisis of old, when the bodies of dropfical persons were burst, their children sat with their feet in water; for, by this means, it was believed the disease would be prevented from being transmitted to their children<sup>s</sup>. The people of *Antwerp*, in *Van Helmont's* time, were of opinion, that *nisi omnis aqua e cadavere hauriretur, in proximum hæredem hydropem migraturum; adeoque solliciti erant de sectione*; “ unless all the water were drawn out of the corpse, the dropsy would pass to the next heir; and therefore they were solicitous for the cutting open the body:” this persuasion of the people had at least this good consequence, that frequent opportunities were afforded to physicians of examining the dead bodies of dropfical persons, that they might so much the better investigate the causes and effects of this disease. It was said before, that persons of a weak, flaccid habit, were most liable to this disease. Now as the offspring of such persons are generally infirm, we easily perceive a reason why an hereditary disposition should be enumerated among the causes of this disease.

Too sudden and copious drinking of cold liquors.] This is no unfrequent cause of a dropsy, especially in camps, when soldiers tired and heated with hard labours, or with a long march, drink greedily large draughts of cold liquors, and rest themselves presently afterwards. Heretofore, when we treated of the pleurisy and peripneumony, we shewed how great a risk they incur of sudden death, or of very acute diseases, who, when the body is heated by the weather, or by violent exercise, swallow large draughts of cold liquor. But if they escape this first danger, there remains another, which is, that they should suddenly become dropfical. In some diseases drinking very cold water is of service, as we mentioned when

<sup>s</sup> Plutarch de his quæ sero a numine puniuntur, Tom. II. pag. 558.

when we spoke of the cure of the iliac passion, the hæmoptysis, &c. But prudent physicians give cold water in small quantities and at intervals, so that it may have time to be warmed in the stomach, and afterwards diffuse itself equally over the whole body. For when cold liquor is drank under these regulations, and the patients lie well covered up in bed, a gentle heat diffusing itself even to the extreme parts usually follows, and a copious sweat all over the body ensues, by which the water abounding in the blood is exhaled.

But when the body being heated, large draughts of water are swallowed down without any moderation, and men repose themselves after it without being covered so as to keep themselves warm, no sweat follows, and sometimes the urine is discharged in very small quantities, and all the water that is drank remains mixed with the blood. Now from *Hales's* ingenious experiments, related above, it is evident that a large quantity of water being suddenly thrown in upon the blood, it does not pass from the extreme arteries in the sanguinary veins, but is deposited by the more subtle secretory branches of the arteries in the cavities of the body, and soon produces an universal dropsy. This happens to those unfortunate persons, who repose themselves presently after drinking cold water; for if they continued to move about briskly, the muscles acting strongly and continually, would hinder the water from lodging in the cellular membrane, which is every where spread over the muscles, and fills up their interstices; and at the same time as motion keeps up the warmth of the body, the water taken does not stagnate, and either passes off from the body by sweat or urine; or if it too violently oppresses the body, is thrown out by vomiting, or discharged along with the stools.

Besides, when the stomach is suddenly distended by cold liquors being drank, the motion of the body having before heated the liver, which lies close  
upon



upon the stomach, and the sudden chill affected this viscus, may bring on an hepatitis, and its effect a tetismes of the liver, as was said before, §. 916. But we shall see presently, that a dropsy frequently arises from a schirrus of the liver; and therefore, from a double cause, a dropsy may follow on a too hasty and eager drinking of cold liquors when the body is heated; either suddenly, the water swallowed remaining in the body; or more slowly, in consequence of the liver being previously diseased. But as the ancients held the cooling the liver to be a primary cause of the dropsy, and thought this distemper might arise from this alone, without any preternatural tumour of the liver, although they well knew that a schirrus of the liver often preceded a dropsy. *Aetius* <sup>t</sup> speaks as follows: *aquæ inter cutem morbo corpus apprehenditur ex toto refrigeratione, hepate in his in principio affecto; post vero aliquando & durum fit quod palam in illis videre est, qui ex intempestivo aquæ frigida potu hepar refrigeratum habent acervatim, ut statim aquæ suffusionem operetur, priusquam ipsum in tumorem schirrosum elevetur;* “the body is attacked  
 “by a cutaneous dropsy, from refrigeration alone  
 “primarily affecting the liver, which afterwards be-  
 “comes sometimes hard also; as is evident in those,  
 “who, from an unseasonable drinking cold liquor,  
 “suddenly chill their liver so as to cause a dropsy,  
 “before this viscus swells into a schirrous tumour.” *Aræteus* <sup>u</sup> has given a most excellent description of this sudden dropsy; *fit & hydrops subito a copioso frigida potu, quum præ nimia siti ad saturitatem quispiam multam aquam gelidam ingurgitaverit; postea humidum in peritonæum delatum fuerit, atque inde in ventribus inusitus calor refrigeratus fuerit. Deinde in ilia guttæ effluunt, quæ prius in aërem versæ per transpirationem digerebantur. Id igitur si incidit facilius est hujus morbi curatio, antequam viscus aliud aut totus homo affectus*

<sup>t</sup> Serm. X. Cap. xx. pag. 233.  
 diurn, Lib. II. Cap. i. pag. 50.

<sup>u</sup> De caus. & sign. morb.

*affectus sit* ; “ a dropſy alſo ſometimes comes on ſuddenly from a too plentiful drinking of cold water when urged by vehement thirſt a perſon greedily ſwallows his fill of cold water, and the liquor paſſes to the peritonæum, and from thence the natural warmth of the cavities of the body cooled ; and then drops of water are poured in the flanks, which before paſt off in the form of a vapour by perſpiration. The diſeaſe is more eaſily cured in this caſe, than after any viſcus is injured, or the whole habit poſſeſſed by it.” *Hippocrates* principally condemns ſtagnating rain-water and ſays, that a dropſy of the whole habit may ariſe from the incautious drinking of it <sup>w</sup>. *Quum quis pæſtatis tempus ex longo viæ itinere in aquam pluviam ſtagnantem inciderit, eamque avidè copioſam biberit : igitur carnes ebiberint & in ſe continuerint, nuſquam autem ſeceſſus fiat hæc contingunt* : “ when any one ſummer time, after a long journey, lights on ſtagnating rain-water, and greedily drinks large quantities of it, if the ſh ſh imbibes and retains it, and it be not any way evacuated, theſe diſeaſes ariſe. Then he adds this wiſe remark : “ If the perſon who has drank the water continues to walk, no bad conſequences may follow ; but if he reſt from walking, and the evening be come on, it will ſoon bring on grievous diſorders.” On another occaſion, §. 1051. I gave ſome remarks on this ſubject but we are here treating of a dropſy ariſing from plenty of cold water ſuddenly drank. As to ſtagnating water, ſuch as that in pools and marſhes, even if they be not drank in large quantities at once, *Hippocrates* has remarked elſewhere <sup>x</sup>, that they will ſometimes produce fatal dropſies ; but he does not there ſpeak of a ſudden dropſy, which is leſs fatal than thoſe which take place in conſequence of ſome diſeaſe of the viſcera ; for he ſays, *æſtate dysentericæ multæ indundum*

<sup>w</sup> De intern. affect. Cap. xxviii. Charter. Tom. VII. <sup>x</sup> De aëre, locis, & aquis. Charter. Tom. VI. pag. 195.



*dunt, & diarrhœa & quartanæ febres diuturnæ. Hi autem morbi producti ejusmodi naturas ad hydropas deducunt & perimunt*; “many dysenteries go about in summer, and diarrhœas and obstinate quartan agues. Now these diseases, in length of time, bring mortal dropsies on persons of such constitutions:” nay, he ascribes a dropsy of the womb to the use of standing water.

Acute diseases.] *Celsus*<sup>y</sup>, treating of this disease, says, *sæpe hoc malum per se incipit, sæpe alteri vetusto morbo supervenit*; “this disease often comes on of itself, and often in consequence of some other disease which has been of long standing.” We have already spoken of the first species of dropsy: it remains, that we see after what other diseases a dropsy commonly follows.

Acute diseases, especially those of an inflammatory kind, seem to have a quite opposite nature to a dropsy; as in these there is a burning heat, together with a dryness of the mouth, nostrils, and tongue, and of the whole skin: hence it may seem strange, that the dropsy should follow disorders of so hot a kind. But it is to be considered, that by these hot acute diseases, those parts which are most fluid, and most susceptible of motion, are dissipated and evaporated from the body; and that the thick parts left behind unite so strongly, that they can scarcely be dilated and attenuated, even by plentiful draughts of water thrown in; nay, they may become so compact and tough, as either not at all to admit the water to mix intimately with them, or that the water will very speedily separate from them, and pass off from the inspissated blood by the secretory ducts, and be discharged from the body, either by morbid sweats or urine. Whence, as has been frequently observed before in the history of inflammatory diseases, physicians reckoned it portends ill, for thin watery urine to be discharged in acute diseases: for  
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<sup>y</sup> Lib. III. Cap. xxi. pag. 101.

it is observed, that the blood sometimes acquires a prodigious viscosity, when deprived of its most fluid parts. Whence, among the causes of melancholy, §. 1093. were enumerated *febres calidæ diu hærentes, sæpe repetentes sine bonâ crisi & sine diluentibus abeuntes*; “ burning fevers lasting long, frequently returning, “ and going away without a good crisis, and without diluting remedies.” Sometimes an insatiable thirst accompanies such diseases: sometimes, although all the causes which excite thirst subsist, and are very vehement, the patient being delirious, takes no liquor. In the first case, while the disease is in full vigour, watery liquors drank in the greatest quantity, are put in motion by the fever, and expelled by various passages from the body: but the cause of thirst still remaining, and the patient continuing to dilute copiously, the disease being declining from its vigour, and the strength broken by the violence of the preceding disorder, the watery liquors which the patient drinks, will not move briskly enough through the vessels; they will separate from the too inspissated blood, will become collected in the larger cavities of the body, and by this means a dropsy will be formed: but in the height of this disease, the patients are not sensible of thirst, the blood will grow exceeding dense, and it will be difficult for the water to be intimately mixed with it afterwards, when in the decline of the disease the patients begin to recover their senses, and eagerly to desire drink. Add to this, that such a viscid blood will be most apt to form the worst kind of obstructions in the viscera: from whence, as we shall presently see, a dropsy may arise. See to this purpose also what has been said already, and following, of chronical cases, which owe their origin to disorders remaining after acute diseases not well cured.

A dysentery coming on in disorders of the spleen, &c.] Before, §. 958. when we treated of the disorders of the spleen, it was remarked, that a  
dysentery



dysentery was of advantage to persons of a bad spleen, if it did not last too long: that is, when the morbid matter which stuffs up the spleen, becoming liquid, passes through the splenic vein into the liver, and thence into the intestinal canal. If, after the morbid matter is evacuated, the dysentery ceases, and the strength returns, this is an excellent sign: but *Hippocrates*, as we then said, thought a long dysentery a bad sign in persons who had diseased spleens, and said, they terminated in a dropsy or lenteria, ending in death.

For in this case, the dysentery is not the effect of the dissolved morbid matter seeking an issue from the body, but rather of a putrefaction in the bowels, and of fluids too thin and acrid.

All obstinate obstructions of the bowels, such as [schirruses, &c.] This is very frequently observed to be the cause of a dropsy, insomuch, that except such dropsies as arise from large quantities of cold liquor greedily and hastily swallowed, and those which proceed from a profuse loss of blood, few dropsies occur, in which one or more of the viscera are not found schirrous.

It often happens, that after the water has been discharged by the operation of the paracentesis, schirrous masses may be perceived, by the touch, residing in the abdomen. Numerous instances may be found to this purport, in the writings of those who have made collections of medical cases. I have seen not a few in bodies dissected, and principally in the liver, so that we need not spend our time in proving this, more especially as schirruses of the viscera, and their fatal effects, have been spoken of before in the chapter of inflammatory diseases; and also, very particularly in the chapter concerning schirruses. But as it appeared at the same time, how difficult the cure of a schirrus was, no one will wonder, that physicians should almost despair of entirely curing a dropsy, when there are schirruses  
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in the bowels. Hence *Aretæus*<sup>z</sup> said, with good reason, *schirri in liene geniti discussiones non facillime sunt; quod si ab hoc oriundi morbi proveniant hydrops aut cachexia insatiabile, malum effectum est*; “ it is not very easy to discuss a schirrus in the spleen, “ and if diseases, such as a dropsy or a cachexy “ spring from this origin, the patient labours under an incurable disorder:” and the same may certainly be pronounced of schirruses in the other viscera; for either by their great size pressing in the neighbouring veins, they may hinder the return of the venous lymph; which is principally to be feared in the liver, as the great vena porta is distended through that viscus, and the ascending vena cava passes through it: (whence also a rupture of the distended vessels may be apprehended,) or else the functions of the viscera, which assimilate the crude aliments, being impaired, the whole body will become cachectic; from which cause a dropsy may equally arise, or from a like cause, the re-absorption of the fluid, which perpetually exhales from the arteries, may be stopt; so that from schirruses of the viscera only, all those things may be effected, which are apt to cause a dropsy, and which have been enumerated in the preceding paragraph.

Physiology<sup>a</sup> shews us, that the texture of the omentum is such, as to be most apt for re-absorbing the lymph, and to mix it so re-absorbed by the passage of the two epiploic veins to the blood of the vena portarum, before it flowed through the liver; therefore if the omentum be diseased, this re-absorption will be impeded.

It has appeared already, from numerous observations, that the omentum has been found decreased in size, so as sometimes to be entirely wanting, or that but a very small portion of it is left. Sometimes, although more rarely, it degenerates wonderfully

<sup>z</sup> De curat. morb. diuturn. Lib. II. Cap. xiv. pag. 128.

<sup>a</sup> Her. Boerh. institut. med. §. 331.



fully from its natural structure; a remarkable instance of which professor *Monro*<sup>b</sup> found in the body of a woman, who died of an ascites; and like observations are to be met with in *Ruyfch*, and others.

It is however to be noted, that in an encysted dropsy of the abdomen, after the water has been discharged by tapping, the bag shrinks up, and resembles, to the touch, a hard swelling, which disappears when the bag is again distended with new water: and after death, in the part where physicians thought there was a hard schirrous tumour, no such thing has been found.

The jaundice.] A schirrus of the liver often accompanies an obstinate jaundice; and besides, it was noted before, §. 950. that if the bile frequently overflows and returns upon the blood, and remains long mixed with it, it so dissolves and attenuates the blood, that scarce any thing of the crassamentum remains: whence a dropsy, and that incurable, usually follows after a jaundice of long standing.

A violent quartan ague lasting long.] See what was mentioned, §. 753. where the subject is on those morbid alterations of the human body, which have been observed to be produced by intermitting fevers. At the same time we noted, that a dropical swelling of the legs, after intermitting fevers, was no very bad symptom. As *Sydenham* has observed, that the fever at the same time left the patient, and thought, that some portion of the morbid matter was then deposited in these parts; therefore he did not treat this complaint like a dropsy, but was able to conquer it by mixtures of a medicated wine prepared with bitters, aromatics, and corroborants.

A lientery, a diarrhœa, &c.] We observed above, that sometimes the watery serum collected in the cavities of the body, and re-absorbed by the veins, sought a passage to discharge itself by stool.

VOL. XII.

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<sup>b</sup> Medical essays and observations, Tom. IV. N<sup>o</sup> 30. pag. 428, and following pages.

When this is the case, dysenteries and diarrhœas are of service, so far as they carry off the morbid matter; and afterwards the relaxed parts, where the collected water lodged, as also those through which it flowed, may be so strengthened by bracing remedies, that health may be restored. Hereafter, when we shall treat of the cure of the dropsy, it will appear, that physicians sometimes endeavour to promote these discharges by art: thus *Aretæus*<sup>c</sup> remarks, *quod hydrops nonnunquam in hanc ægritudinem feliciter commutatus est, in malum scilicet ex malo semelior est successio*; “that a dropsy is sometimes happily changed into this complaint, from one disorder indeed into another; but the change is for the better:” and elsewhere, treating of the dysentery he says<sup>d</sup>, *nonnunquam ex laxo (colo) intestino aqua multa dysenteriae modo profluit, idque millenos ab hydropi liberavit*; “sometimes a great quantity of water is discharged from the relaxed intestine (the colon) and thousands have been freed from the dropsy by this means.”

But these diseases then become remedies, when the strength is increased, together with the discharge of water from the body; as *Aretæus* has well distinguished, when he discourses of the dropsy following a diseased liver: thus he speaks, *quod si pristinas vires natura recipiat, & quandoque per ventrem cum impetu materiam deturbet, post multorum crassorum aquosorumque depulsionem, & ipsum hydropem tollere consuevit. Verum id genus auxilii cum periculo est. Post enim subitas & copiosas inanitiones extremosque collapsus perierunt interdum ægri prostratis viribus*; “if nature recovers her former strength, she sometimes purges off violently the morbid matter through the belly. After discharging much thick and watery matter, she altogether gets rid of the dropsy: but this kind of natural remedy has its danger likewise; for after sudden

“ and

<sup>c</sup> De caus. & sign. morb. diuturn. Lib. II. Cap. x. pag. 62.  
<sup>d</sup> Ibidem, Cap. ix. pag. 61.



and copious evacuations, and the vessels greatly collapsing, the patients sometimes perish from entire loss of strength." Hence also we understand, though it portended ill, *si quibus ab ilibus & lumbis principia fiunt hydropum pedes tumeant, & diarrhœa uturnæ detineant quæ nequē dolores ex ilibus ac & lumbis obortos solvant neque ventrem molliunt*; "if in those patients, in whom the dropsy begins in the flanks and loins, the feet swell, and obstinate diarrhœas seize them, which neither remove the pains in the flanks and loins, nor soften the swelling of the belly." And *Galen* well observes, in his commentary on this place, that το λαπαττειν does not signify an evacuation by stool, when there is a diarrhœa long standing, but the decrease of the swelling of the belly.

All these purgings therefore, if coming on after dropsy, they expel the water from the body, and the strength return at the same time, are of service; but when these having preceded, the body, already rendered weak and cachectic, begins to swell with a dropsy, things are in a bad way. See what was said before, §. 721. concerning a leucophlegmatia and a dropsy following a diarrhœa.

An empyema, a consumption, &c.] The texture of the fluids of the body being dissolved, by the pus absorbed into the circulation in the last stage of the disease, the extremities of the body begin to swell, especially if the nocturnal sweatings (the strength being much sunk, or quite gone) have ceased; and above all, if there be a great thirst, for then the liquor drank cannot be circulated freely through the body; and hence the extremities will swell. See also what was said, §. 1206. on this head.

The gout.] Partly because the gout often follows the intemperate use of wine and other spirituous liquors; which intemperance is one cause of the dropsy, as will presently appear; partly because frequent and lasting fits of the gout almost perpetually

confine the patients to their beds; and as many joints of the body, especially in the lower limbs, have almost lost their power of motion, the patients can scarce stir about, even when they are free from pain. But it was proved, §. 25. that a deficiency of muscular motion produces a laxity and weakness of the fibres; and, §. 44. it was shewn, that this debility had a tendency to produce a dropsy. Add to this that by long lying on the back (in a fit of the gout the kidneys are hurt so as often to breed the stone, and the free excretion and secretion of the urine is impeded. Now we shall see in the next paragraph that making but little water is not only an effect, but sometimes is also a cause of a dropsy.

All excessive evacuations.] Before, in treating of the causes of a cachexy, §. 1168. it was not, that in order to obtain a perfect assimilation of the fluid, was requisite that a small quantity of crude aliment should be mixed with a great quantity of the natural fluids; if, therefore, by immoderate evacuations of any kind, a great quantity of sound humours are discharged from the body, the crude aliment will not be duly assimilated, a universal depravation will follow, together with a cachexy, and a dropsy is the consequence of it.

But a dropsy is most especially to be feared after great evacuations of arterial blood from wounds, after miscarriages, delivery, &c. for the red part of the blood is the finest and most dense, and best fitted to produce and to sustain the natural heat: the other parts of the blood are thinner, and escape from the larger vessels by more subtle lateral branches; they are accumulated in the larger and smaller cavities of the body, and have not sufficient warmth and motion to cause them to be exhaled from thence, or be re-absorbed. For from *Hales's* experiments above related, it appears, that whenever the blood, in a living healthy animal, is too much diluted, a dropsy quickly is the consequence. This too great dilu-



tion of the humours, the observations of *Hippocrates* likewise confirm to be a cause of dropfies<sup>c</sup>: his words are, *si sitim mulier minime temperet, neque vesica neque alvus, tum urinam, tum stercus, ut æquum est transmisserint, neque idoneâ utatur homo victus ratione. Quod si hydropica fuerit copiosi menses derepente, quandoque etiam pauci prodeunt & nonnunquam vel ut aqua ex carnibus fiunt, ut si quis cruentas carnes abluerit, interdunt etiam paulo fortiores neque concreescunt*; “this happens, if a woman drinks profusely to quench her thirst; and at the same time the evacuations by stool and urine are not made in the proper quantities, and the diet be improper: and if she becomes dropfical, the menses flow in large quantities suddenly (sometimes their quantity is but small,) and sometimes they are coloured only like water in which bloody flesh has been washed; (sometimes they are a little higher coloured) and they do not coagulate:” and in another place<sup>f</sup>, where he is treating of the curable and incurable dropfy, he says, *cui vero multum sanguinis sursum & deorsum eruperit & febris in super accesserit, eum aqua repletum iri multa spes est, atque hic hydrops brevissimi temporis est, & ex quo paucissimi evadunt*; “if there happen a large effusion of blood upwards and downwards, and a fever accompany this discharge, there is great reason to apprehend a dropfy, the progress thereof will be speedy, and the issue fatal to most of those who are attacked by it.” This therefore may be established as a certainty, that a diminution of the red part of the blood, whether it be gradual as in cachexies, or sudden as in wounds, disposes the habit of the body to a dropfy.

Drinking acrid, fermented liquids.] On another occasion, §. 23. we said, by the intemperate use of  
C c 3 spiri-

<sup>c</sup> De mulier. morb. Lib. I. Cap. lxxi. Charter. Tom. VII. pag. 762.  
<sup>f</sup> Prædict. Lib. II. Cap. v. Charter. Tom. VIII. pag. 814.

spirituous liquors the abdominal viscera became hard, and that schirruses were formed in them, insuperable by medicine: now obstinate obstructions of this kind are among the causes of the dropsies, as was said a little before.

But they who are intemperate in drinking, are liable to dropsies on another account; for while they indulge in large bowls of generous wine, the body is heated, the fluids rarefy, and all the vessels grow turgid. Remark guests arising from a sumptuous feast; after plentiful drinking, how all their veins are inflated, their faces swelled and ruddy; but after they have slept off the debauch, they are languid, weak, and pale. If they thus frequently, nay daily, indulge their genius so freely, the vessels being so often over-stretched, lose their tone (see §. 25. N<sup>o</sup> 3.) and as prodigious thirst ensues on such debauch, they swallow greedily plenty of watery drink, which increases the debility, and cannot receive a sufficient degree of motion from the relaxed vessels to be dissipated from the body; hence they collect and stagnate in the cavity of the body. This is principally to be feared by those who, repenting of the shameful folly of intoxication, abstain not gradually, but all at once, from all fermented liquors, and fall by that means into a very pernicious languor. See what was said on that head, §. 605. 11.

[Eating tough, hard food.] See on this subject the remarks, §. 25, and 26. as also §. 1168. of bad diet, as one cause of a cachexy.

[Large hydatids.] Of these we treated, §. 1226.

[Many like causes, &c.] In general, all those diseases which sink the vis vitæ greatly, may be causes of a dropsy; as also those which render the blood so viscid, that it can scarcely be diluted with watery fluids, nor intimately combined with them; as was evident in the whole history of melancholy; and in the description of the scurvy, §. 1153. the thickness

of



of the blood constituted one part of the proximate cause; besides, these diseases have many common causes with the dropsy, as is plain from what has been said, §. 1053. and §. 1150.

## S E C T. MCCXXX.

**T**H E effects therefore and progress of the disease are generally such as follow: the feet swell, especially towards evening this swelling gradually grows and increases; also a swelling of the abdomen gradually increasing: a sound of the distended abdomen on a blow, if there be a tympany: a noise of the fluctuating water in an ascites, from water freely floating in the cavity of the abdomen; but in an encysted dropsy this symptom fails: a difficulty of breathing: thirst: weight: torpor: costiveness: little urine: a slow fever: want of sweating: emaciation so much the greater, as the swelling of the part affected is greater: water under the skin of the thighs, scrotum, and abdomen: hydatids: acrimony of the water, stagnating in a warm close place, and thence becoming putrid: ulcers: mortifications: bleeding from the nose: umbilical ruptures: sphacelusses of the viscera: death.

It will be worth while to consider how, and with what symptoms this disease begins and increases.

The feet swell, &c.] If the disease take its origin simply from a watery thinness of the fluids, the swelling begins there, when the ascent of the venous blood is most difficult; so that the swelling first appears about the ankles, because shoes bind the feet themselves so much, that they cannot easily swell:

but if the dropsy arise from schirruses of the bowels, or ruptured vessels, then the abdomen swells before the feet; and swelling of the feet often comes on late in an ascites, especially if the collected water be lodged out of the cavity of the abdomen, as was said §. 1226. This swelling is mostly perceived towards evening, because in the day-time the person being either erect or sitting, and not moving his body much, the fluids could not easily ascend: nay, it is observed in men healthy in other respects, that the lower limbs are swelled more or less toward evening; so that strait shoes are most uneasy at that time. But such a swelling of the feet in the beginning, by the horizontal posture in sleep, and the warmth of the bed, is dispersed so as to be quite unperceivable in the morning, and returns again in the evening. As the disorder gradually increases the swelling rises higher, and does not disappear again any more in the night-time.

But we must know, that it is not every swelling of the feet which indicates a dropsy: for in the beginning of a scurvy also (see §. 1151. 2.) there is a swelling of the legs coming on and disappearing again: but this scorbutic swelling does not feel soft and doughy, but resists the pressure of the finger more. Nor does there remain in those pits, which *Hippocrates* has thus described a sign of the dropsy, (under the name of the ileum) in those whose diet has been hot and moist, and who have not used exercise, but have commonly slept on a full stomach; *si digito partem aliquam comprimās, impressionem facies & sibi vestigium apparebit, quemadmodum in farina aqua subacta, maxime autem in pedibus cavitas imprimi-tur*; “if you press any part with your finger, you “will make such an impression as will leave a mark “as it would on dough, and this will principally “appear if you press the feet.” But, as was observed in the foregoing paragraph, sometimes after acute



acute diseases there is a humour separated from the blood, deposited in one or both feet, to the manifest relief of the patient; and then by motion, frictions, taking the air in fine sun-shiny weather, and using corroborating remedies, such swellings are dissolved which at first might be thought dropfical, as they are altogether like the swelling in an anasarca. Celsus<sup>h</sup> also seems to point out this, when he says, *aqua inter cutim minimè terribilis est, quæ nullo antecedente morbo cæpit: deinde quæ longo morbo supervenit, atque si firma viscera sunt, si spiritus facilis est, si nullus dolor, &c.* “water under the skin is not very dangerous, if it has not taken rise from any preceding disease; nor even that which follows on a long disease, if the viscera be sound and the breathing easy; if there be no pain, &c.” Then after enumerating all the functions, and supposing them unimpaired, he concludes, *si quidem in quo omnia hæc sunt, is ex toto tutus est, in quo plura ex his sunt is in bona spe est;* “so that where all the functions are in this good state, there is no danger; where most of them are so, there is good reason for hope:” for in such a case the swelling increases pretty fast, till all the morbid matter being deposited in the extremities, the viscera are quite freed from it. But in the beginning of a dropsy the swelling gradually increases, and the other symptoms follow successively, shewing that the viscera are not disburthened by a transferring of the morbid matter to other parts, but that the swelling is a consequence of the viscera being impaired by diseases. *Quibus vero ab hepate hydropes fiunt, tussis & tussendi cupiditas ipsis innascitur, nihilque effatu dignum expuunt, ac pedes tument, venterque non dejicit, nisi & dura, & ad necessitatem, & circa ventrem tumores prodeunt, qui partim ad dextra, partim ad sinistra, tum consistunt, tum desistunt*<sup>i</sup>; “when dropfies take rise from diseased livers, a  
“cough

<sup>h</sup> Lib. II. Cap. VIII.<sup>i</sup> Hippocr. Prognost. Charter.Tom. VIII pag. 621. Coac. Prænot. N<sup>o</sup> 452. Ibid. pag. 878.

“ cough and an urgency to coughing attacks the  
 “ patients, they spit but little, the feet swell, the  
 “ belly is costive, and the stools, when they have  
 “ any, hard, and swellings shew themselves about  
 “ the belly, which have their inclination partly to  
 “ the right and partly to the left side.”

Certainly *Sydenham*<sup>k</sup>, who so attentively watched diseases in their very origin, accounted pits left on the impresson of the finger in the lower part of the legs, principally conspicuous towards night, and disappearing again in the morning, as the first symptoms of a dropsy. He cautions us, however, that this symptom is not infallible, *nisi ita affecti spiritum ægrius ducant; qui quidem tumor, tam copia quam mole auctior in dies redditur, donec pedibus majorem aquarum copiam jam respuentibus, crura tentantur & postea abdomen ipsum*; “ unless they who have this swelling  
 “ breathe with difficulty; and in this case the swelling  
 “ increases in size every day, till the feet, not  
 “ being able to admit any more water, the legs swell,  
 “ and afterwards the abdomen itself.”

But although, for the most part, the feet swell in the beginning of a dropsy, yet the swelling does not begin in the lower parts; for, as we have already observed, frequently in an hydrocephalus, a dropsy of the thorax, and an ascites, the feet either do not swell at all, or not till towards the end of the diseases, when a confirmed dropsy has filled the cavities of the body with water. Nay, it should seem from the observations of *Hippocrates*, that a dropsy sometimes begins in the face itself, and descends from thence towards the lower parts; for thus he describes the disease which he calls *crassum*, and indeed its fourth kind, which is a true dropsy, and which he advises to be treated in the same method by which we attempt the cure of a dropsy: *‘ hic morbus a pituita alba fit: in ventre vero colligitur, ubi febres diutissi-*

*mæ*

<sup>k</sup> *Traſtat. de hydrope, pag. 608, 609.*  
*Cap. LII. Charter. Tom. VIII. pag. 676.*

<sup>l</sup> *De intern. affect.*



*mæ corpus occuparint. Hic morbus initium sumit a facie. & facies tumet, deinde ad ventrem descendit; quo quum pervenerit, ventrem in magnitudinem attollit, corpusque velut a defatigatione succumbit. In ventre pondus est & dolor vehemens, & pedes intumescunt;* “ this disease “ arises from white phlegm, and occupies the belly “ after long fevers have preyed on the body. The “ disease begins from the face, and the face swells, “ thence the swelling descends to the belly; where, “ when it is arrived, it distends the belly to a vast “ size, and the body languishes, as oppressed and “ tired out with supporting its burden. There is a “ weight and a great pain in the belly, and the feet “ swell.” Then he adds as wonderful a symptom which he had observed in this disease; *quod si pluvia in terram effusa fuerit, pulveris odorem non sustinet; si vero in pluvia forte constiterit, & terræ odorem senserit, mox concidit;* “ if the rain have wetted the earth, “ the patient cannot bear the smell of the dust; and “ if he stand still in the rain and smell the earth, he “ presently falls down.” On another occasion, §. 1210. I took notice of that wonderful smell which the earth emits when wetted by rain.

Then a swelling of the abdomen, &c.] That is, if the water begin to be gradually collected in the cavity of the abdomen: for if the watery serum is collected only in the adipose membrane, as it is in an anasarca, then the abdomen is not more swelled than the other parts of the body; as the water is not collected in its cavity, but universally under the skin.

But we discussed sufficiently the diagnostics of a tympany and of a simple ascites, under §. 1226.

A difficulty of breathing.] That is, when the free expansion of the lungs, from the air drawn in, is impeded. If the abdomen be filled and distended with water, this will hinder the diaphragm from descending as freely as it should do in inspiration; whence the dilatation of the thorax is hindered. But this will be still more the case, when the cavity of the

the breast is not filled with water as well as that of the abdomen. And, in an universal anasarca, there is room to fear that the cellular membrane of the lungs may be affected in like manner, as was said, §. 1220. Whence a difficulty of breathing is very reasonably accounted a bad design in a dropsy; because it is either the consequence of an extreme fullness of the abdomen from an ascites, or gives cause to fear that the thorax and lungs are affected with the same disorder.

On the same account also a cough is reckoned a bad sign in this disease, as it equally shews the function of the lungs to be disturbed by the quantity of the collected water; or that they are perpetually irritated even by a smaller quantity of water grown acrid, as was before observed, §. 1219. Hence *Hippocrates*<sup>m</sup> says, *hydropicis tussis succedens malum*; “a cough coming on in dropsies is a bad sign.” *Galen*<sup>n</sup>, in his commentary on this aphorism, notes that the cough is then principally a bad symptom, when the cause of it is the increase of the dropsy, but not when a dropical person is accidentally teized with a cough from some other cause: for it may be produced by a catarrh, or by other causes. In another place *Hippocrates*<sup>o</sup> seems not to pronounce a cough simply to be a bad symptom in this disease, but says, *hydropicum si tussis detineat, desperatus est*; “if a cough constantly afflicts a dropical person, the disease is incurable.” Here he uses this phrase, *ἢ βῆξι ἔχῃ*, (or if a cough hold him) which seems to indicate that constant dry cough in dropsies; whereas, perhaps, in the other passage, he intends a slighter cough just in its beginning.

[Thirst.] Before, in treating of feverish thirst, the causes of thirst were enumerated. Driness, obstructed passage of the fluids, a saline acrimony, &c. Now all these causes concur in a dropsy, if the disease has been

<sup>m</sup> Aphor. 35. Sect. VI. Charter. Tom. IX. pag. 270.  
<sup>n</sup> Ibidem. <sup>o</sup> Aphor. 47. Sect. VII. Ibidem, pag. 317.



been of long standing; for dropfical persons are not very thirsty in the beginning of the distemper. When the watery serum is collected in the cavities, it does not return by the veins, nor is any more mixed with the blood. Hence the blood is, from day to day, more and more deprived of its most fluid part, and rendered less capable of flowing freely through the vessels. At the same time, from this defect of moisture, the more fluid and watery part of the blood, the secretions of the finer juices are diminished; whence they become dry, and the tongue and palate are parched; and while the belly alone is increased in size by an ascites, all the rest of the body withers with a marasmus. Nor does even copious drinking quench the thirst, because the fluids taken in are not easily combined with the too exsiccated blood, and soon escape from the vessels into the dilated cavities of the body: for the skin no longer perspires, and the urine is discharged but in very small quantities, as we shall see presently: hence the liquor taken in remains in the body and increases the dropsy, but does not remain in the vessels through which the fluids circulate. Hence with reason it is, that it is said of dropfical people,

*Quo plus sunt potæ, plus sitiuntur aquæ:*

“ The more they drink of water, the more they  
“ thirst for it.”

And the collected lymph is salt and brackish, by having stagnated a long time in the cavities of the body, becomes more and more acrid, and almost alkaline. Add to this, that dropfical persons are costive, and therefore the excrements long restrained in the primæ viæ become putrid: it is evident, therefore, that there are many very efficacious causes of thirst in this disease.

A hea-

A heaviness and torpor.] These unhappy persons are overwhelmed with the mass of water, and their strength, much impaired, is scarce able to sustain the unwieldy body. If we reflect besides, that plenty of good animal spirits cannot be secreted in the brain from the blood, which is so vitiated in this disease, another reason will occur why the body feels heavy in dropfical persons, and they become sluggish and inactive. Besides, sometimes water begins to collect in the ventricles of the brain, by which means the patients sometimes die lethargic. It is also worth observing, that the blood deprived almost of all the lymph, moves with difficulty through the vessels of the brain, whence all the animal functions may be disturbed, and that in various manners. This also seems to be confirmed by the observations of *Hippocrates*, when he tells us <sup>p</sup>, “ that if epileptic fits attack dropfical persons, they are fatal.”

Costiveness.] When the abdomen is distended by a prodigious quantity of water, the intestines are compressed; hence the fæces are accumulated in the intestina crassa; they grow hard, and cannot be excreted without great difficulty. Add to this, that frequently in dropfical persons the viscera, whose function it is to prepare chyle, are schirrous, and clogged with obstinate obstructions: now all these viscera bear a part in forming good bile, as physiology evidently shews. But among the uses of the bile this is one, to promote the alvine excretion: whence, if the bile be deficient in quantity; or if, from the powers of the viscera being impaired, it wants its due qualities, it is easy to see how this cause also may produce costiveness. *Hippocrates* excellently enumerates all these symptoms of a dropsy <sup>q</sup>; *quibus ex aliquâ ægritudine ad hydropem res devenit, his alvi siccae, caprini stercoris pilulis similia dejiciunt, cum eliquatione mucosa, & urina non bona: & distensiones circa*

<sup>p</sup> Coac. Prænot. N° 454, 459. Charter. Tom. VIII. pag. 878, 879.

<sup>q</sup> Ibid. N° 481. Charter. Tom. VIII. pag. 880.



*a hypochondria, & dolores ac tumores circo ventrem, & dolores circa laterum mollitudinem, & juxta spinæ musculos; accidunt febres quoque, & sitis, & tusses siccae sequuntur; & circa motus spirandi difficultas, & crurum gravitas, & a cibis abstinent, & paucis ingestis explentur;*  
“ when persons fall into a dropsy from some other disease  
“ they are costive, and their excrements are in small  
“ round balls like pills, and resembling goats dung,  
“ with a mucous slime, and the urine not laudable,  
“ and tension about the hypochondria, and pains and  
“ swellings about the belly, and pains about the soft  
“ part of the sides, and near the muscles of the  
“ spine; fevers also, and thirst, and dry coughs  
“ come on, and a difficulty of breathing on motion;  
“ and a weight of the legs; and they lose their ap-  
“ petite, and feel a fulness from a small quantity of  
“ food.”

The belly is so sluggish, for the most part, in dropfical persons, that when the cure of the disease is attempted by purges, a double and sometimes a triple dose of cathartics is necessary to procure stools.

Urine in small quantities.] While all the watery serum is accumulated in the cavities, it is not strange that but little urine should be secreted from the blood, almost deprived of its lymph. It is equally certain, that a great quantity of thin watery drink will be discharged from the kidneys, unless by strong exercise, or the warmth of the air, the man being heated, expels the water superabounding in the blood by sweat. This is very evident in those who drink great quantities of mineral waters: and in summer the urine is observed to be less copious, when much fluid is perspired through the skin; and *vice versa*, in the cold of winter. At the same time it has been observed, that when a larger quantity of urine is discharged suddenly by nature, or by the help of art, that dropfical swellings are not only diminished, but sometimes entirely removed. *Van Helmont* considered this, and resolved to let slip no opportunity  
6 of

of pouring forth invectives against the schools of physic, (being a hater of all the ancient physicians, but chiefly of *Galen*) would have it that the seat of all dropfies was in the kidneys. He sneers at the ancient physicians, who maintained the cold and temperature of the liver to be one cause of dropfies; and affirms that he had dissected several bodies of dropfical patients, and had never found any fault in the liver but once; from whence he concluded<sup>r</sup>, *in hydropse autem efficiens archæum renum, in conceptu idea a perturbatione suâ genitæ claudit renes & fit hydrops*; “in a dropfy the efficient archæus of the kidneys, “conceiving an idea generated from his perturbation, shuts up the kidneys, and a dropfy is produced.” And elsewhere<sup>s</sup>, *renes actualiter hydropem fabricant & continent. Abdomen vero per actionem regiminis rerum diversorium præbet, & ren laticem tanquam scenæ productum eo mittit. Non enim quatenus per aliud viscus, latex furtim abripiatur, sed solus ren laticem proscribat ad loca ipsi subjecta*; “the kidneys actually form and contain the dropfy; but the abdomen, by the governing action of the kidneys provides it a lodging. The kidneys send a stream from their own seat thither, for the fluid is not furtively snatched away as it were by another viscus, but the kidney alone banishes the fluid from itself to the part subjected to its government.” Whence he concludes<sup>t</sup>, *ergo verus hydrops ascites est in renibus, sive solvere pertinacem seram renum, est solvere hydropem*; “therefore a true ascites is in the kidneys, and to loosen the obstinate fastening of the kidneys is to cure the dropfy.” Wherefore if this perturbation of the idea in the archæus of the kidneys were not set right, he thought the dropfy might be cured; for thus he speaks<sup>u</sup>: *authores aliquot commendant busones vivos, utrimque renibus alligatos*.

<sup>r</sup> In capitulo ignotus hospes morbus, §. 70. pag. 399. <sup>s</sup> Ibidem §. 20. pag. 411. <sup>t</sup> Ibidem, §. 19. pag. 412. <sup>u</sup> Ibidem §. 36. pag. 415.



*atos, solvere hydropem per lotium. Saltem vidi rusticum hydropicum sanatum, alligata anguim senecta per ventrem & renes. Inducitur enim idea metus renibus, qua indignationem amittant. Eodem videlicet modo, si is ideam tristitiæ sive denegatæ appetentiæ suscitatur unde ren suæ indignationis obliviscitur ;* “ some authors recommend live toads bound to the kidneys on each side the back, in order to cure the dropsy by a discharge of urine. I have at least seen a dropfical peasant cured, by tying the slough of snakes on the belly and loins : for an idea of fear is raised in the kidneys, by which they lose their indignation. In the same manner thirst excites an idea of sorrow, or of an unsatisfied desire, by which means the kidney forgets its indignation.”

The followers of *Van Helmont*'s wonderful dogmata were astonished at the sagacity of their master, who had found out that the causes of all dropsies were in the kidneys, and exclaimed in the public schools, that no one before *Van Helmont* ever thought of this. However, it is certain that the ancient *Greek* physicians acknowledged a diminution of the secretion by urine, as a cause and sign of a dropsy about to come on, and thought it a bad sign if the dropsy were already formed. Certainly *Hippocrates* <sup>w</sup> has said, *in biliosis alvus turbata, dejiciens parva renituræ similia, mucosa & dolorem circa pubem inducens, & urinæ non expeditè prodeuntes* (ἐκ' ἐλύτως) *ex talibus in hydropem desinunt ;* “ in bilious persons, a purging with small stools resembling semen, mucous, and attended with a pain near the os pubis, and a discharge of urine not coming readily, (so I think ἐλύτως should be rendered) end in such persons in a dropsy.” And soon after <sup>x</sup>, *hydropico febrienti urina pauca & turbata perniciofa est ;* “ a small quantity of turbid urine is a bad sign in a dropsy attended with a feverishness.” *Aetius* <sup>y</sup>, treating of a hardness or schirrus of the kidneys, VOL. XII. D d says,

<sup>w</sup> Coac. Prænot. N° 455. Charter. Tom. VIII. pag 878.  
<sup>y</sup> Ibidem, N° 456. <sup>y</sup> Serm. XI, Cap. xvii. pag. 270.

says; *mingunt pauca, & reliquo corporis habitu aqua inter cutem laborantibus similes existunt. Quidam etiam temporis progressu manifestè in hydropem incurrunt*; “ the patients make but little water, and their habit of body resembles that of persons labouring under an anasarca; and some of them in time fall into a manifest dropsy.”

On the other hand, *Aretæus*<sup>2</sup> held a copious discharge of urine the best remedy for a dropsey: for treating of the diabetes, he calls it a species of dropsey, differing only in this, that in a diabetes the water flows out of the body, and is not collected in the cavities as in a dropsey; and adds, *hydropicis eadem hæc via succedit, si in bonum vertitur morbus*; “ a discharge by the same passages comes on in a dropsey, if the disease tends to a cure.”

But inasmuch as we shall hereafter, in treating of the cure, the drawing out the collected water from dropfical persons is almost always of service, if it be performed cautiously; and does not however cure the disease, unless the cause can be removed. Hence *Aretæus* prudently adds, *ac bonum est si causa solvatur, nec ponderis duntaxat levatio fiat*; “ this is good if the cause be removed, and not only the burden taken off.” But as the ancients saw that the whole body was withered, and dried up with a marasmus, while the dropfical parts alone increased in bulk, they said that every thing liquefied and turned to water. Thus *Galen*<sup>3</sup> said, *fit igitur quædam quasi in elementia divino (ἀνασχησίῳ) vel colliquatio, vel dissolutio, aut quomodocunque quis aliter nominare voluerit, aliquando totius corporis, aliquando humorum qui in venis sunt duntaxat. Atque hujus colliquamentum alias ad ventrem confluit, alias ad urinas, alias ad sudores pellitur. Ac humeribus, quos venæ continent, in serosam saniem resolutis, renes ad excrementum id trabendum nati, polissimum quum sani sunt serum quidem a venis expurgant, fluxionem autem ad vesicam*  
*assiduam*

<sup>2</sup> De morb. diuturn. curat. Lib. II. Cap. 11. pag. 129

<sup>3</sup> Lib. III. de symptom. caus. Cap. VIII. Charter. Tom. VII. pag. 99.



*fiduo mittunt. Ubi autem renes trahere non valent, enæ ejusmodi serum in ventrem mittunt, aut toti id cor-  
ori partientes subitaneos hydropum status inducunt;*  
there happens a kind of division into the elements,  
(ἀνασολχέωσις) or colliquation, or dissolution, (or  
whatever else any one shall chuse to call it) some-  
times of the whole body, sometimes of the fluids  
in the veins only. And this flux sometimes rushes  
to the belly, sometimes issues forth by urine or  
by sweat. And the fluids in the veins being dis-  
solved to ichorous serum, the kidneys formed to  
draw this secretion to themselves (especially when  
they are sound) purge off the serum from the  
veins, and send off a flux thereof to the bladder  
perpetually. But when the kidneys are no longer  
capable of attracting this fluid, the veins evacuate  
this serum into the belly, or distribute it to the  
whole habit of the body, and sudden dropsies are  
brought on."

How well is this opinion of *Galen's* confirmed by  
the experiments of the present age! At first sight it  
would seem extremely probable, that the blood broken  
down into a watery serum, would easily pass through  
the secretory ducts of the kidneys, and increase the  
quantity of urine: but to the secretion of the watery  
serum from the blood, by the structure of the kid-  
neys, a brisk motion of the red blood through the  
larger vessels is requisite; which, if it be deficient  
either from a defect of the red part in the blood, of  
which the crasis is too much broken and attenuated,  
or on account of the strength of the vessels being di-  
minished, the secretion becomes defective in the kid-  
neys; or, according to *Galen's* phrase, *non trahunt*  
*renes*; "the kidneys do not draw."

*Hales*<sup>b</sup> made a curious experiment, which entirely  
confirms what we have just now said. Cutting open  
the jugular veins of a dog, he, by a tube, inserted  
into the artery, washed out with warm water, all the  
red blood when the animal was dead: while the

D d 2

body

<sup>b</sup> *Hæmaſtat. Exper. XIV. pag. 118, & ſeq.*

body was yet warm, he opened the abdomen and thorax; then he inserted a large brass tube into the aorta, that the warm water might freely enter the artery at such a height, that the pressure of the incumbent weight might be equal to the force which urges on the arterial blood: while the warm water was thus moved through the arteries, he fomented the body constantly, by pouring on it warm water, and covered it with cloths wet with warm water, and sometimes dipped the whole body in warm water. By the help of all these cautions, no part of the warm water passed through the kidneys into the ureters and bladder, although the kidneys were swelled with hardness with water.

Does it not appear from hence, that *Van Helmont* said nothing new, when he said, the secretion of urine being obstructed, was a cause of the dropsy? The old physicians, from a careful observation of this disease, knew and wrote the same. I have before taken notice, that many things, which are admired in this extravagant author, are found better expressed among the ancients. *Galen* said simply the kidneys do not draw the watery serum. *Van Helmont* say better, when he affirmed, that the archæus of the kidneys, in indignations, threw aside the reins of government over his proper fluids? Do he seem wise when he believes, that tying live toads or the slough of snakes, to the reins, terrifies the archæus, and brings him to a better disposition, as that he will duly perform his old functions?

A slow fever.] Although in the beginning of dropsy, the whole body is cold and languid, and that the dropsy seem to be a disease quite foreign to a fever; yet a fever commonly attends a dropsy long standing; partly from the tendency of putrefaction in the stagnating of fluids, or from the blood being deprived of its diluting lymph, which, escaping from its proper vessels, is collected in the cavities of the body. On this head, see what is said



. 586. 2. where we treat of the causes of a fever. On which account *Aetius*<sup>c</sup>, discoursing of the dropsy, says, *astidiunt etiam cibum potum autem largiorem, plurimi appetunt, maxime qui ascite laborant; et enim humor, qui in locis detinetur salsus est, & putrefactus quare & tunc & febris augefcit, fere enim in totum plurimi ex hydropicis febriunt;* “ they loath food, but most of them are desirous of plenty of drink, especially they who have an ascites; for the humour lodged in the cavities is brackish and putrid, wherefore the thirst and fever increase; for almost all dropfical persons are feverish.”

No sweat.] That the fluids may pass through the extremities of the minute arterial vessels of the skin, it is necessary that the skin should be soft and warm with the natural heat; but in dropfical persons, the legs and swelled thighs are as cold as marble, while the parts not immediately affected by the dropfical swelling are, as will presently be seen, quite withered and emaciated. Physicians entertain very good hopes of a cure, if dropfical persons spontaneously, or by art, obtain sweats; as this is a sign, that the extravasated serum is re-absorbed, and circulates again through the vessels, and is exhaled by the pores of the skin from the body. Hence physicians, as will be said hereafter, sometimes attempt the cure by sudorifics; but they grieve to find the truth of *Retæus*'s<sup>d</sup> words long ago; *citra madorem illorum corpus est, itaque neque in balneis sudore malefcant;* their body has no moisture, wherefore they do not grow moist with sweat, even in warm baths.”

Emaciation.] Unless that which is wasted, both the fluids and solids, by the action of the healthy body itself, be repaired and restored to the parts by wholesome food, the whole body would waste away with a true marasmus: but even the very best food requires the action of all the viscera and vessels, and

D d 3

a plenty

<sup>c</sup> Serm. X. Cap. xx. pag. 233.  
<sup>d</sup> De caus. & sign. morb.  
 return. Lib. II. Cap. i. pag. 50.

a plenty of sound juices pre-existing in the body that what is wasted may be repaired. Now the whole blood is depraved, from its natural qualities and the viscera are compressed by the water collected in the cavities of the body: hence the exercise of their functions is impeded, and nutrition is so much the more defective in those parts which are not swelled, as the dropfical parts are more distended and turgid. Whence *Hippocrates*<sup>e</sup> says, *Et si quidem by drops ex purgationis defectu oriatur, venter impletur pedes Et tibiæ attolluntur, humeri vero Et claviculæ, pectus Et femora contabescunt*; “and if a dropsy follow “ from evacuations being suppressed, the belly swells “ as also the feet and legs; but the shoulders, clavicles, breast, and thighs, are wasted.” And *Aetius*<sup>f</sup> also, with good reason, accounts this emaciation of the upper parts, a bad sign. Indeed all inveterate dropfies, which have already impaired the habit, are dangerous.

An anasarca of the thighs, scrotum, &c.] These disorders generally follow an ascites of long duration, when the ascending vena cava and the iliac veins are compressed by the water in the cavity of the abdomen: but then the anasarca of the lower limbs increasing, ascends and extends under the skin of the abdomen. Besides, from the daily increasing distension of the skin, the subcutaneous, sanguiferous veins are pressed: hence, whatever exhales from the arteries into the cellular membrane, can no longer be re-absorbed by the veins; hence the cellular membrane will begin to grow turgid. In persons who have an ascites, large sanguiferous veins are visible in the skin of the abdomen, full of black blood, which makes surgeons caution those, who perform the operation of the paracentesis, to avoid them, especially if the operation be to be performed in the scrotum. See also what was said of an anasarca, §. 1225.

Hydatids.]

<sup>e</sup> De affect. Cap. vi. Charter. Tom. VII. pag. 626. <sup>f</sup> Serm. X. Cap. xx. pag. 234.



Hydatids.] Of these, frequent mention has been made already.

Acrimony of the water, &c.] It is known, that our fluids have a tendency to putrefaction; but so long as they circulate through the vessels, and those particles which are most corruptible are excreted from the body, all putrefaction is hindered in a living person. But when the fluids stagnate long in the cavities of the body, putrefaction is to be apprehended, which is longer before it begins, if the cavities be closed; but much speedier, if access be once given to the air. Perhaps this is the reason, as will be said hereafter in treating of the cure of a dropsy, why the drawing the water from the belly, by portions at a time, has often been attended with ill success: for the air having gained admission, putrefaction is remarkably accelerated. Nay, it has been observed, that water drawn out by tapping, at first shewed no signs of putridity; but that after it had been exposed for a few hours to the air, it stunk abominably. Although the water will grow putrid in any cavity of the body, yet this will sooner happen when an ascites occupies the cavity of the abdomen, than in other dropsies: for from the newly opened abdomen even of a healthy person, there reeks forth a vapour, of smell something like urine, and having somewhat of a stench. The abdominal viscera are perpetually agitated by the motion of respiration: the bile which approaches nearest to putridity of all the fluids, transudes in such a manner, that the parts near the gall-bladder are often found tinged with yellow in dead bodies: the fæces retained long in the *intestina crassa* (for dropical persons are costive) exhale a putrid steam. All these causes concur to make the waters putrify sooner, which, when it once happens, the viscera perpetually soaked in such a corrupted fluid, consume into a putrid gore: whence it is held a bad sign, if in tapping, the water come out already putrid, or so as to affect

the fingers, and soften the skin in the same manner as an alkaline lees; of which hereafter.

Ulcers, gangrenes.] When the watery serum stagnates long in the cellular membrane, it not only distends the skin, but, becoming gradually more acrid, inflames and corrodes it. It often happens that dropical persons put their feet (cold and swelled) very near the fire, without feeling that the scurfy skin is raised by the heat into blisters, which breaking, ooze out perpetually a considerable quantity of serum. We shall see hereafter, §. 1242. that such openings are sometimes attempted by art with good success; but as then a free access is afforded to the air, those flaccid parts, which have long been drenched with acrid lymph, suddenly mortify, (as we noticed, §. 423.) unless this be prevented by antiseptic fomentations. And often these places, through which the serum is discharged, turn to sores very hard to heal, as the perpetual afflux of acrid serum is a hindrance to the reducing such a sore to the state of a simple wound; (see §. 411.) which is necessary to the cure of an ulcer. Whence *Hippocrates*<sup>a</sup> well remarks, *orta hydropicis in corpore ulcera non facile sanantur*; “ulcers formed in dropical bodies are not easily cured.” *Galen*, in his comment on this passage, observes, that the difficulty here proceeds from the moisture, as an ulcer must be dried before it can be brought to a cure. *Celsus*<sup>b</sup> also confirms this observation; for after he has enumerated the various species of dropsies, he adds, *communis tamen omnium est humoris nimia abundantia; ob quam ne ulcera quidem in his ægris facile sanescunt*; “an excess of moisture however is common to all of them; on which account ulcers are not easily healed in such patients.”

Bleedings from the nose.] But a small quantity of blood indeed flows through the vessels; but if we reflect, that all the lower limbs are pressed upon by the

<sup>a</sup> Aphor. 8. Sect. XI. Charter. Tom. IX. pag. 253, III. Cap. XXI. pag. 161.

<sup>b</sup> Lib.



the incumbent water; and that in an ascites, when the abdomen is greatly distended, the descending branches of the aorta are also compressed. It is evident the blood moves freely only through the superior vessels. If now, at the same time, (as has been already said in this chapter) the patient has a difficulty of breathing, the venous blood cannot return from the head: hence dropfical persons, cold all over their body, feel a heat sometimes on the head, and have a flushing in the cheeks; then there follows a bleeding at the nose, which does harm by diminishing the quantity of blood, already too small, and also affords a bad sign; which, as all the vessels of the lower part of the body are exceeding compressed by the dropfical swelling, it should seem the prognostic mentioned by *Hippocrates*<sup>i</sup>, is applicable to this bleeding of the nose in a dropsy: *in morbis longis parvæ apparentes, sanguinis fluxiones perniciosæ sunt*; “in  
 “chronical diseases, small fluxes of blood are a fatal  
 “symptom;” for but a little blood then flows through the vessels, as violent hæmorrhages from the nose are not to be expected. Perhaps also another passage of *Hippocrates*<sup>k</sup> has a reference to this case: *alvi interceptæ, sed parvæ, nigra, caprinis stercoribus similia, ex necessitate deficientes, nasus in his sanguinem fundens malum*; “the belly is costive, and when  
 “forced to give stools, voids small black excre-  
 “ments, like goat’s dung; in these circumstances,  
 “the nose bleeding is a bad sign.” For dropfical persons are costive, as we observed before; when also we quoted that text of *Hippocrates*, where he used the same word (*σπυραδώδες*) to express the form of the excrements.

Umbilical ruptures.] It is known, that the linea alba, as it is called, of the abdomen, is pierced about the middle of its length with a round hole, through which

<sup>i</sup> Coac. Prænot. N° 340. Charter. Tom. VIII. pag. 871.

<sup>k</sup> Prædict. Lib. I. Ibidem, pag. 728. Coac. Prænot. N° 603, Ibidem, pag. 888.

which passes the umbilical chord in a foetus, and is then wider; but is less wide in grown persons. In the mean while, however, as this place is less firm than the rest of the surface of the abdomen, umbilical ruptures are not very unfrequent: it is not therefore strange, that when the abdomen is full of water, this part should be over-stretched, and thereby umbilical ruptures be occasioned. When a thick and firm fat covers the abdomen, ruptures are less likely: and surgeons have observed, that if ruptured persons, who were thin before, begin to grow fat, they are more easily cured. As the old physicians had observed, that when the dropical parts were distended with water, the others were emaciated: hence they said, as was noted, §. 1228. that the fat liquified and turned to water. But *Hippocrates*<sup>1</sup> tells us, that a dropsy is curable, as long as there is any fat in the lower belly: *sed an pinguedo in imo ventre, ad sit nec ne his potissimum diagnosces; si sane febres ad venerint, & erectus stare nequeat, & umbilicus inflatus promineat pinguedinem non amplius inesse dicito eumque sanari non posse;* “but whether there be  
 “any fat in the lower belly or no, you may know  
 “principally by the following rule; if fevers come  
 “on, and the patient cannot bear an erect posture,  
 “and the navel be inflated and bunch out, you may  
 “pronounce, that there is no longer any fat, and  
 “that he is incurable.” From which passage it appears at least, that he thought, when all the fat was wasted, the navel would be more likely to be protruded. But it does not seem right always to esteem this a sign, that the dropsy is incurable, as observations shew, that when the navel has not only been protuberant; but when an actual rupture has ensued in that region, from violent pressure of the water, the patients have survived. *Du Verney junior*<sup>m</sup> saw

<sup>1</sup> De intern. affect. Cap. xxiii. Charter. Tom. VII. pag. 655.  
<sup>m</sup> Academie des Sciences, l'An. 1702. Memoir. pag. 285, & seq.



saw this event in a woman who, in the flower of her age, after a suppression of the lochia, laboured under an ascites, together with a considerable swelling of the thighs and legs. After many things had been tried without success, the operation of tapping was performed, greatly to the relief of the patient; and afterwards the urine, which had before been discharged in very small quantities, was copious; so that all the dropfical swelling disappeared, at the same time the appetite and sleep were good, and the strength soon returned; so that she was thought to be entirely cured, although a purulent matter had been drawn out, together with the water; but in some weeks after the abdomen swelled again, when the patient thought of being tapped again, the navel began to swell, and was opened. A like fluid issued forth as had been drawn out by tapping; a week after the navel was opened again, and perfectly clear water came away. This happened to her twice more afterwards, the navel spontaneously closed, and she recovered perfect health.

Another case is described by Mr. *Chomel*<sup>n</sup>, in which also, after delivery, on the lochia being suppressed, the abdomen swelled; and although the navel burst, and a vast quantity of foetid humour issued therefrom, the patient survived and was perfectly recovered. An ascites also, which had lasted many years, was cured. The water issuing from the navel of a woman some years above forty, after very strong hydragogue purges and diuretics administered by the physician, the size of the abdomen rather increased than diminished; and as she would not bear to be tapped, she was abandoned by her physician. After a violent purge, she felt the water come out by the navel, but gradually, and without any inconvenience, except that her linen was perpetually wet. This oozing out of the water lasted the whole winter; and the swelling of the abdomen did not indeed

<sup>n</sup> Ibid. l'An. 1728. Memoir. pag. 583, & seq.

deed increase, but she grew thin, and lost her strength. In the month of May the next year, as she was riding in a coach, the water burst from the navel with great violence, and in a large quantity which was followed by great faintness; but although there ensued also a fever, attended with vomitings, hiccoughs, and an asthma, yet she survived and lived some months; when being seized with another disease, which was a cholic, with an obstinate constiveness and violent vomiting, she died in a few days. The abdomen being opened, no water was found, nor any thing preternatural in the bowels, except that the uterus of a large size was found entirely schirrous, and weighed four pounds and an half°.

Such instances seem to shew, that such salutary efforts of nature, first suggested evacuation of the water by the operation of the paracentesis.

Sphacelusses of the viscera, death, &c.] That is, when the viscera are soaked in the water, already grown putrid, and dissolved into a rotten pulp.

But the chief things which are of consequence in forming the prognosis of this disease, are thus expressed in Hippocrates<sup>p</sup>; *eum qui hydrope correptus est, & superstes est futurus, bonis visceribus præditum esse oportet, ita ut natura se exserat, simulque facile concoquat & bene spirèt, sitque sine dolore & totum, corpus æqualiter tepidum habeat & non circa extremas partes colligatum, melius est autem ut tumores potius habeat in extremis partibus, optimum vero est, neutrum horum habere, nam molles & graciles esse convenit extremas partes, itemque ventrem ad contactum mollem. Tussim vero adesse, non oportet neque linguam resiccari, tum reliquo tempore, tum post somnos, quando hæc valdè fieri solent. At cibos libenter accipere oportet, & usi idoneam copiam comedet non affligi. Alvum vero ad medicamenta quidem celerem habere, reliquo autem tempore egerere excrementum molle*  
figura-

° Medical essays and observations, Tom. III. pag. 78. and pages following.    <sup>p</sup> Prædict. Lib. II. Cap. v. Charter. Tom. VIII. pag. 814.



*figuratum. Urinam apparere convenit secundum institutum (morem) & vinorum mutationes. Laborem vero oportet ferre facile, & lassitudinis exsortem esse. Ac optimum quidem est hominem per omnia sic dispositum esse, & sic securissime sanus fieri poterit. Sin minus, plurima ex his habeat; nam spes erit ut superstes evadat. Qui vero nihil horum habuerit sed contraria cum desperatum esse scito. Qui autem pauca horum habuerit quæ bona esse dixi si hydropē laboranti adsint huic exiguæ spes restant;* “when a person has a dropsy, in order to have  
“good room to hope for his recovery, his viscera  
“must be unimpaired, that nature may exert herself; his digestion must be good, and his breathing easy; and he must be without pain, and have  
“his whole body equally warm all over, and not  
“quite wasted away about the extremities: it is  
“rather better that the extremities should be swelled  
“than wasted away; but for neither of these to be  
“the case is the best of all; for it is desirable to have  
“the extremities soft and slender, and the belly  
“soft to the touch. There should be no cough, nor  
“thirst; nor the tongue be dry at any time, especially after sleep, when these complaints are most  
“usual. His appetite should be good, and he should  
“be oppressed by eating a proper quantity. He  
“should be easily purged by physic, and the excrement by natural stools should be soft and figured.  
“The appearance of urine should answer to his  
“manner of living, and the kinds of wine he  
“drinks. He should be able to bear exercise, and  
“not be soon tired. It is best of all when a man  
“has all these circumstances attending his case, and  
“he may then entertain the higher hopes of health.  
“The next thing is to have a number of them, or  
“some of them, and then there will be hope of  
“his escaping: but his case, who has none of these  
“favourable circumstances, is desperate. He in  
“whom a few of these symptoms concur, which I  
“have

“ have said were good signs in a dropsy, may have  
 “ some small hopes.”

It appears from this passage; that he thought the diseases so much the more dangerous, as the greater number of the functions of health were impaired thereby. As *Galen* well observes as a general axiom in the passage quoted before, §. 3. *cujusque morbi tanta magnitudo est, quantum a naturali statu recedat; quantum vero is recedat, is solus novit qui naturalem habitum ad amissum tenuerit*; “ the greatness of every  
 “ disease is in proportion to the alteration it pro-  
 “ duces from the natural state; but how great that  
 “ alteration is, he only can tell, who knows accu-  
 “ rately what the natural state is.”

## S E C T. MCCXXXI.

**T**HE indications therefore for the cure of a dropsy, are, 1. To procure a free flow to the lymph, or to the fluid, whatever it be, whether water, or bilious, ichrous or bloody serum. 2. To draw out the water, already extravasated and collected in the cavities. 3. To repair the injury done to the bowels, whether it be the cause or the effect of the dropsy.

After mention has been made of those things which regard the diagnosis and prognosis in a dropsy, it follows to treat of the cure; and first we are to speak of the general indications of cure. Afterwards we shall see by what method, and by what remedies, these indications are to be answered.

1. The lymph then has its due flow and circulation, when the fluid itself is of a proper texture for circulation, and is propelled through unobstructed vessels with a due quantity of motions; where all these points are obtained, this first indication is fully answered.



answered. But inasmuch (as has been frequently said already) as the subtle lymph, which perpetually is exhaled in the form of a fine steam into the smaller and larger cavities of the body, unless it be re-absorbed by the veins, collects in these cavities and causes a dropsy: Hence to prevent this, the mouths of the veins must be open, and no obstruction must exist through the whole venous system, to impede the return of the re-absorbed lymph from the cavities of the body. Now it was demonstrated before, that a sudden dropsy might arise merely from the compression of the veins; and at the same time we noted, that asthmatical persons frequently became dropfical, because the lungs being contracted in the paroxysm of the asthma, the right ventricle of the heart could not freely propel the blood into them; and therefore the receptacle of the venous blood, *viz.* the right ventricle, remains full, and thus an obstacle is formed to the free motion of the venous fluids. Besides, it appears probable enough, that in time of health the arteries exhale a steam, which is re-absorbed by the veins before it can be condensed to lymph. So that such a degree of heat is required in the body, that this condensation may not soon or easily be effected. Such a vapour exhaled from the abdomen, thorax, and pericardium of a healthy animal opened speedily while living, which after death condenses into lymph as the body grows cold.

But although this vapour, and the lymph formed from it, when condensed, consists for the most part of water, yet this is not pure water, as the urinous smell of this vapour shews. Besides, there is often mixed with this lymph, collected in the cavities of the body, a quantity of serum, which coagulates when put over fire. Whence the water of dropfical persons is often tinged with the yellow colour of serum; which colour is sometimes deeper in an ascites, on account of the bile transuding, as was said before. These waters also may, by long stagnation and a putrefaction

trefaction beginning, be turned to a sharp ichor; but then little hope remains. However, the word ichor in the writings of *Hippocrates* and the ancient physicians, did not always signify a sharp putrid humour; for the vapour perpetually exhaled into the cavities of the body was called *πνεῦμα*; but when this vapour was condensed into a liquid, it was then called *ἰχώρ*.

It sometimes happens, that the waters of dropical persons are tinged with a reddish colour, approaching that of the blood; when the blood-vessels, long soaked and corroded, let out their contained fluid: but this is also sometimes observed, although all the vessels are still entire, especially in the pericardium; where, on account of the nearness of the heart and the great blood-vessels, the circulation of the blood is the most rapid: for there is often found in the bodies of healthy men, dying a violent death, some quantity of reddish lymph. It should seem, that by the rapid motion of the fluids through the vessels in this part, some portion of the red globules is forced through the dilated orifices of the exhaling arteries; and anatomical injections shew, that red wax itself is prest out all over the surface of the heart, although the vessels remain entire.

But concerning the different colours, and various qualities of the waters collected in the cavities of the body, and the prognostics to be drawn therefrom, mention was made partly §. 1219. and this will be further considered, §. 1240. when we come to speak of the operation of the paracentesis in an ascites.

2. Unless this can speedily be performed, there is always room to fear lest the waters, either increasing in quantity, should injure the bowels by their weight and pressure; or becoming acrid by delay, should corrupt them. This drawing off the waters from the cavities is to be obtained, either by enabling the veins to re-absorb the collected lymph, which being again mixed with the blood, may be discharged by various passages from the body; or if this cannot be effected, some



some issue for the waters must be found by art, by piercing the place in which the collected water stagnates. Art is of great use to answer this indication; but far the greater difficulty attends the next indication.

3. It appeared from what was remarked, §. 1229. when the causes of a dropsy were enumerated, how many there are among them; which cannot be removed at all, or not but with the greatest difficulty, by art. In the preceding section, mention was made of the most pernicious effects which are to be feared from a dropsy, and which remain even after the dropsy is removed, and which it is not always in the power of art to correct, or to remove. If the viscera are almost corrupted, and by having been long soaked in the water, or corroded by the fluid become acrid; who shall promise a cure? Whence the dropsy is deservedly accounted among those diseases which are difficult to be cured. I have known chemists puffed up with their *arcana*, who boldly promised a certain cure of the dropsy; but I have often been a witness how shamefully they have failed. *Van Helmont*<sup>a</sup> boasts, *se super bis mille hydropicos, etiam quorum lotium jam ex ruento nigricaret, & totâ nocte vix unum cochlear minxerant, in pristinam sanitatem restituisse*; “that he had restored to health above two thousand dropsical persons, and even some whose water had first been bloody and changed from thence to black, and who had scarce made a spoonful of water in a whole night.”

He did not, however, prolong his life to a great age, as he died at 56 years old: and I believe there are few physicians, who are lovers of truth, who would dare to make the same boast. It is true indeed, if we may believe *Helmont* himself, that at 17 years old he excelled other physicians. He was born 1588, and gives the following testimony of himself:

VOL. XII.

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<sup>a</sup> In capitulo ignotus hydrops, §. 11. pag. 409.  
pag. 408.

<sup>b</sup> Ibid.

*In autumno 1605, ex Anglia Antwerpiam rediens, reperit aliquot centenos post malignam atque popularem febrim hydropicos: multos sanavi, multique sub infauftis aliorum tentaminibus interima perierunt: “ In the autumn of the*  
*“ year 1605, on my return from England to Antwerp*  
*“ I found many hundred persons become dropfical*  
*“ after a malignant epidemic fever: I cured many*  
*“ and many perished under the unsuccessful practice*  
*“ of other physicians.” Is not the proverb applicable*  
*here, Oportet mendacem esse memorem, “ Lyars should*  
*“ have good memories?” Certainly the wise ancient*  
*thought far differently, of this disease. Hydrops in*  
*jucundum aspectu vitium est, & toleratu difficile. Ab ipso*  
*enim perpauci liberantur, idque felicitate quadam ac deorum*  
*potius quam artis (majora enim omnia vitia soli deo*  
*medicantur): nam aut in viscere primario morbus deli-*  
*tescens totum in malum habitum convertit, aut omne cor-*  
*pus ingruente pestilentia in malum succum viscera permu-*  
*tavit, quando sibi utraque vicissim ad perniciem suffra-*  
*gantur; nullaque est pars noxa carens, quæ vel modica*  
*naturæ opem afferre possit<sup>s</sup>: “ the dropsy is a disease*  
*“ of a disgusting appearance, and troublesome to be*  
*“ borne. Very few persons recover from it, and that*  
*“ by some great good fortune and assistance, rather*  
*“ from the gods than from art (for the gods alone*  
*“ cure all extreme disorders): for either the disease*  
*“ occupying at first some particular viscus, vitiates*  
*“ in time the whole habit, or this evil attacking the*  
*“ whole body, at last corrupts and wastes the vis-*  
*“ cera; sometimes both causes lend each other mu-*  
*“ tual aid to effect the patient’s destruction; and no*  
*“ part remains untainted with the disorder, or re-*  
*“ taining power to assist nature against her enemy.”*  
*On this account Aretæus wondered that dropfical per-*  
*sons were fond of life<sup>t</sup>; cujus rei causa dici non po-*  
*test, sed mirari tantum id licet: hoc autem magnum est*  
*Namque in aliis, non omnino perniciosis affectibus, ægro-*  
*tante.*

<sup>s</sup> Aretæus de causis & signis morb. diuturn. Lib. II. Cap. I. pag. 48.

<sup>t</sup> Ibidem, pag. 50.



*stantes abjecto sunt animo, tristes, mortis amanti: in his vero & bene sperant, & vitæ cupidi sunt: ambo hæc contraria morbi efficiunt;* “ for this no cause can be assigned, but we can only wonder at it. For in other diseases, and those not mortal, patients are low spirited, sad, wishing for death; in dropfical cases they flatter themselves they shall recover, and desire life: such contrary effects do different diseases produce.”

## S E C T. MCCXXXII.

**T**HE due degree of fluidity is preserved in the lymph, by removing the impeding causes, which are, 1. The vis vitalis urging on the circulation too feebly. 2. The compression, rupture, or obstruction of the vessels. 3. The too great viscosity of the fluid itself.

The free flow of the lymph is hindered, either by the fault of the vessels through which it circulates, or from the too great viscosity of the fluid itself; or lastly, if both the containing vessels and the contained fluid are in a good state, there may be a defect of force in the moving causes.

1. That our fluids may be moved with a proper force through the vessels, not only the due action of the heart is required, but of the vessels also; for if these are weak, the food will not be assimilated to the animal fluids, and follow its own natural tendency, (see §. 10.) and a cachexy will be brought on, which often is the forerunner of a dropsy, as has been said before. Now as the motion of the fluids depends on the strength of the vessels, hence we noted before, §. 26. that from the weakness of the solid fibres followed so easy a distension of the vessels, as also ruptures, tumours, &c. which all prepare the way for a dropsy. Whence also, §. 44. a

dropsy was enumerated among the effects of weak and relaxed viscera. Now it was shewn, §. 69. that a glutinous tenacity of the fluids arose from the same causes, by which the free flow of the lymph likewise is impeded.

2. A compression of the venous vessels may impede the return of the lymph, and a rupture of the largest sort of these vessels may, by perpetual dropping of the lymph, fill the cavities of the body. This seems less to be apprehended in the lymphatic arteries, as they are small, and therefore no great discharge of lymph will ensue on their being ruptured; but if the lymphatic arteries should be compressed, the exhalation into the cavities of the body would be hindered, whence driness would rather follow. Any obstruction in these arteries would produce the same effect; and an obstruction can hardly take place in the lymphatic veins, (see §. 119.) unless their cavities should be rendered narrower by the real pressure of some adjacent tumour, or from some similar cause.

3. It has been observed, as was said before, that the watery serum collected in the cavities of the body acquired sometimes such a lentor, that it could not be evacuated at all, or with great difficulty, by tapping. But it seems most probable, that when it began to be collected, it had not that tenacity, but was altered by stagnating long in the cavity; but such a tenacity may be formed in the circulating fluids, either of a hot inflammatory kind, or of a cold glutinous sort, which will produce very difficult obstructions of the viscera, and so cause a dropsy; (see also §. 1229.) in order therefore for the radical cure, this tenacity must be removed.



## S E C T. MCCXXXIII.

**T**HE first cause is removed by cordial, corroborative, and stimulating remedies, which, if thirst be not very urgent, are to be chosen from aromatic, saline, oily, warm drugs, in the form of an electuary, of a mixture, a medicated wine, or beer, or in pills, decoctions, syrups and lozenges, which form may easily be varied at choice.

Frequently the whole body is cold in a dropsy, the vis vitalis languishes, the feeble circulation imparts but a slow motion to the fluids; so that *Horace's* expressions are applicable;

*Aquosus albo in corpore languor;*

“ O'er the pale bloated body languor reigns.”

Wherefore it is then proper to increase the motion of the humours through the vessels. Now as the heart is the primum mobile of the circulation, the remedies adapted to this end are called *cordials*: these sustain and augment the vital motion, although they do not immediately operate on the heart<sup>u</sup>. It is usual to divide cordials into those which fill the vessels by returning a plenty of sound juice; or those which strengthen the solids through which the juices move; or lastly, those which by their pleasant fragrance suddenly recruit the exhausted powers, and hence are supposed to increase the quantity of the animal spirits, or by an acrid stimulus so irritate the fibres subservient to motion, that the sluggish vessels and torpid juices are excited to brisker motion.

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But

<sup>u</sup> H. Boerh. Institut. Med. §. 1055. & seq.

But although care should be taken for the whole some diet of dropfical persons, yet those cordials properly belong to this indication, which strengthen and brace the flaccid parts, and accelerate the languid circulation by their stimulating power. In our author's *Materia Medica* under this head, are enumerated such remedies as have these medical properties, and there we find also various formulæ composed of these medicines, from which others may easily be drawn up. For as it is sometimes necessary to keep this indication in view for a long time, it is often convenient frequently to change the forms, (persisting still in the same course of remedies) lest a too frequent repetition of the same prescription should create a loathing.

Caution however will be necessary in the use of these methods, that we do not all at once and too suddenly accelerate the circulation. For the dropsy grows, and the abdomen increases in its swells, while the arteries persist in exhaling the serum, and the veins do not re-absorb it. Hence, if the motion of the fluids should be violently and suddenly accelerated, especially if they are greatly attenuated, they might all be forced out into the dilated abdomen, and all the vessels of the body would suddenly collapse, which would be dangerous. *Trallian*<sup>w</sup> certainly gives a very prudent caution, when he says, *nam calefacientia nimium si universa ac una vice assumantur, totum potius habitum colliquant potius aliam abundantem humorem evacuant*; “for very heating remedies taken in plenty and at one dose, rather melt down the whole habit, than evacuate the superfluous humour.”

Besides, when those juices which have hitherto been stagnated are suddenly set in motion, such a sudden fulness of the vessels may ensue, that the lungs may be oppressed and the patient suffocated. Thus we see when the body is swelled by an anasarca,

<sup>w</sup> Lib. IX. Cap. III. pag. 528.



farca, if the patients attempt to move suddenly, they begin to have such an oppression on the breast, that they can scarce breathe, especially if they try to walk up an ascent. Wherefore prudent physicians endeavour to set the stagnating fluids in motion not all at once, but gradually, to the intent that the extravasated serum being re absorbed and mixed with the blood, may be expelled by the pores, or by an increased discharge of urine: for unless this end can be gained, no cure will be effected by increasing the vital motion. For very soon that which had been mixed with the circulating fluid will again be lodged in the cavities.

*Hippocrates* <sup>x</sup> commends a similar method; for he says, *huic ventrem siccare confert*; “it is of use to dry such a patient’s belly;” and he recommends dry food of roast flesh particularly. He allowed indeed boiled fish, but such as had been dressed the day before and were grown cold, that they might be as dry as possible; and therefore he ordered that they should have no sauce and be without salt, that the thirst might not be increased. He gave dark-coloured, thick-bodied, austere wine, but in small quantities; and recommends radishes and smallage among pot-herbs, and advises walking in the morning and after supper. He gives nearly similar directions in another place <sup>y</sup>; but all these things are allowable only if there be no violent thirst, which by these hot remedies would be so much increased, that the patients would not be able to refrain from drinking largely, whence the fluids would have a greater quantity of water added to them, than could be exhaled from the body by the acceleration of the vital motion, so that the dropsy would be augmented.

<sup>x</sup> De intern. affect. Cap. xxxiii. Charter. Tom. VII. pag. 655.      <sup>y</sup> De morb. Lib. II. Cap. xxviii. Ibidem, pag. 580.

## S E C T. MCCXXXIV.

**I**F the thirst be very urgent, and the cause of a hot nature, and the disease be attended with a hot fever, which often happens, the first indication requires more cordials, which are called refreshing, such as are those which have a pleasant, acid, and mild aromatic quality in them.

The thirst is seldom very troublesome in the beginning of a dropsy: but this complaint comes on often when the disease has made a great progress, and it is deservedly esteemed a bad symptom; for thirst, as was said formerly, §. 636. has for its causes either the obstructed circulation of the humours, or want of moisture or acrimony; which in an inveterate dropsy is of the putrid kind. When the watery part seceding from the blood is collected in the cavities of the body, the blood, deprived of its dilating vehicles, is rendered too dry and unfit for passing through the vessels, and then thirst arises, which is sometimes very troublesome: but the dropsy increases, by indulging in drink to assuage this thirst; nor is the thirst removed by drink, because the water received into the body easily separates from the blood, and adds to the quantity of extravasated fluid: nor does it at all diminish the unaptness of the fluids for passing through the vessels; wherefore the cause of thirst still subsists, and in this case those warm stimulators are not to be allowed.

Sometimes dropfies are the consequence of acute diseases, and such dropfies *Hippocrates*<sup>2</sup> accounted very dangerous; for he says, *hydropes ex acutis morbes omnes mali; neque enim febrem solvant & cum dolore sunt* veke-

<sup>2</sup> In Prognost. Charter. Tom. VIII. pag. 619. & Coac. Prænot. N<sup>o</sup> 452. Ibidem, pag. 878.



*vehementi & lethales*; “all dropfies ensuing on acute diseases are of a bad kind, for they do not put an end to the fever, and are attended with great pain and prove mortal.” This is principally true, after very bad continual fevers, some species of the scarlet fever, miliary and petechial eruptions; so that the first rise of the dropfy coincides almost with the end of these disorders, and sometimes the patients begin to swell before the heat of the fever is quite over. In such circumstances it would be very unsafe to use warm and stimulating remedies. Whence *Trallian* has a whole chapter on this very subject, of patients who are afflicted with a dropfy together with a fever<sup>a</sup>, and makes the following remarks; *quam aqua inter cutim, ex acutis morbis profecta non potest, non inflammationes habere in ipsa perseverantes: nihil enim adeo intervallorum expers est ac febris: ac mirum quod neque aqua inter cutim ipsis oboriens, calorem ægrotum extinguat, neque febris omnem aquam intercutim exhauriat, sed ab aqua & igne simul contineantur ambo, ut undequaque dubia fiet curatio, sive calefacere sive refrigerare quidpiam velis*; “wherefore it is not possible, but that when an anasarca proceeds from acute diseases, the heat and inflammation attending in these should persist in the anasarca: for no disease is so much without intervals as a fever, and strange it is, that neither the dropfy coming on should extinguish the heat of the patient, nor the fire of the fever dry up the water of the anasarca: but for the causes fire and water should continue to support both diseases, so as to render the cure more ambiguous and hazardous, whether we attempt to excite warmth, or to cool the patient.”

But it frequently happens, that in an inveterate dropfy, the stagnating waters begin to putrify, and to become acrid; and then a hot fever is kindled in the body which was cold before: a prodigious thirst comes on, and all things tend from bad to worse.

Thus

<sup>a</sup> Lib. IX. Cap. III. pag. 526.

Thus it is sometimes observed, that the legs and thighs of dropfical persons, which were fwelled and pale, and cold as marble, begin to grow red and warm, while, at the fame time, even a flight touch of the skin gives pain. The skin is foon after corroded, and fometimes a great quantity of watery ferum oozes from it, with fome relief to the patient; but often a very bad and spreading mortification follows. Whence *Trallian* well advifes<sup>b</sup>; *quod fi aqua inter cutim laborantes etiam febricitant, admodum callidis auxiliis utendum non est, neque in visceribus, neque in cibis aut potibus, aut antidotis, aut purgationibus, &c. nullum enim valdè calefaciens ipsis juvare potest. Nam ejusmodi medicamenta sitim ipsorum augent, & febrim incendunt, & causus inflammantes magis adhuc exurunt intendantque malum*; “but if they who have an anasarca are also feverish, we must not use very warm remedies, neither for the bowels, nor in food or drink, or antidotes, or carthartics, &c. for nothing very heating can do them good; for such remedies only increase their thirst, and add fuel to the flame of the fever, and render the evil more intense.”

But seeing, as has been said, that a dropfy (especially that kind called an anasarca) sometimes follows acute diseases, it was perhaps for this reason, that the old physicians recommended bleeding in this species of dropfy. Thus *Vegineta*<sup>c</sup> advised to begin the cure of a tympany and ascites by hydragogue purges; but he would prefer bleeding as the first step taken in an anasarca; *maximè si a suppressis hæmorrhoidibus aut menstrua purgatione, affectus originem habuerit; præterquam si jam antea sanguinem miserint, in malo habitu constituti*; “especially if the disorder took its rise from a suppression of the hæmorrhoidal or menstrual discharge, except the patients have used bleeding before for their complaints.”

We

<sup>b</sup> Ibidem, pag. 525.  
versa.

<sup>c</sup> Lib. III. Cap. XLVIII. pag. 48.



We read like observations in *Trallian*<sup>d</sup>, where he asserts, that bleeding is sometimes requisite in an anasarca; *ut quæ ex sanguinis frigidi copia nascatur. Ac frigiditatis ratione quidem illa non indiget, sed quoniam copię detractio naturam levat*; “because it arises  
 “from a superfluity of cold blood; and it does not  
 “indeed require bleeding on account of the frigid-  
 “dity, but because diminishing the quantity lightens  
 “nature of a load.” But from another passage it appears, that *Trallian* hesitated concerning bleeding<sup>e</sup>; for he adds several cautions, and allows of bleeding, only when there is an inflammation tending to a schirrus in the viscera, or a great quantity of depraved humours in the veins; if the strength be entire, the patient in the vigour of life, and the weather be not very cold. Nay, he seems to prescribe bleeding only with a view to the more safely administering very heating remedies; and is very careful to warn us, that great caution is necessary; *et enim intempestiva sanguinis missio in aliis quoque periculum inducit in hydropicis autem interdum etiam mortem*; “for unseasonable bleeding in other diseases is  
 “dangerous; in dropsies it is sometimes fatal.”

It was before observed, that an impeded motion of the venous blood may give rise to a dropsy, and therefore too great a fulness of the vessels may have this tendency also. In such a case, lessening this fulness by bleeding would undoubtedly be of service. An instance to this purpose is related by *Hildanus*<sup>f</sup>, of a very robust man of a sanguine constitution, in his thirtieth year, who was swelled from head to foot. While the physicians were attempting the cure by operients and gentle purges, the blood suddenly gushed from his right nostril, to the quantity of four pints: a syncope followed this violent hæmorrhage. When the hæmorrhage was stopt suddenly, his strength returned; *verum etiam ab hydrope citra aliorum*

<sup>d</sup> Lib. IX. Cap. 111. pag. 514.<sup>e</sup> Ibidem, pag. 518.<sup>f</sup> Observat. Centur. I. pag. 43.

*aliorum remediorum usum brevi curatus est*; “but the patient was also soon cured of the dropsy, without the use of any other remedies.” Hence we plainly see under what circumstances bleeding may be allowable in a dropsy, as most commonly the loss of blood is hurtful to dropical persons; nay, a profuse discharge of blood, even in robust and healthy men, sometimes brings on a dropsy, as was observed, §. 1229. When therefore the disease took rise from a hot cause, or a hot fever comes on and attacks a dropical person, or vehement thirst torments the patient, those warm stimulating remedies, mentioned in the preceding section, are not adviseable. Wherefore in the *Materia Medica*, under this head, other kinds of remedies are prescribed. Crytals of tartar, rob elder, rob of juniper, spirit of sea-salt, &c. which both appease the thirst, and most efficaciously counteract the putrefaction apprehended in this case. Aromatic remedies are also mentioned here, but of the milder kinds; and the quantity, a skilful physician will easily determine, according to the degree of languor, heat and thirst, under which the patient labours.

## S E C T. MCCXXXV.

**I**N either case, (§. 1233, 1234.) friction, motion, and warmth, are of use.

The whole intention of our heart here is to dispose the stagnating lymph, that it may be re-absorbed by the veins; and that being re-absorbed and circulating with the fluids, it may be discharged by various channels from the body: but how serviceable frictions are for increasing the motion thro’ the vessels, was shewn §. 28. N° 2. And besides, it appeared, §. 334. when we treated of the cure of a bruise, of how great efficacy friction, prudently managed, was for dissolving extravasated and grumous blood; therefore



fore its effects will be still greater on serum beginning to lose its fluidity: and friction is above all efficacious in an anasarca, wherein the collected water stagnates in the adipose membrane; for although friction may have its use in other kinds of dropsies, yet it acts more immediately on the extravasated serum, when the skin only intervenes, than if the abdomen was to be strongly rubbed in an ascites. Whence *Trallian*<sup>z</sup> says, *at perfricatio hydropicis, adhiberi debet potissimum; ut externos corporis meatus rarefaciat, humores extenuet & discutiat*; “friction should be used in dropsies, principally to open the pores, and to attenuate and dissolve the humours.” *Aetius*<sup>h</sup>, and many other writers, highly commend friction for the cure of an anasarca: but these frictions were administered in various manners; *utendum igitur prima die quidem fricatione, per modicum oleum, moderate & molliter facta: in progressu autem, & sicca, & multa, & cum intentione magis oppressa, deinde etiam per lintea asperiora*; “the first day therefore we should use friction with a little oil, moderately and gently; afterwards dry, hard and close friction; and at last, the patient may be rubbed with coarse, rough, linen cloths.”

Certainly, when the skin is rubbed by the hand smeared with oil, it is less hurt and irritated, and the patients endure rubbing longer without pain. It is indeed true, that a part rubbed with oil is rendered perspirable; but as the intention is only to set the stagnating fluids in motion, and to alleviate those which are sluggish and viscid, increasing at the same time the motion of the fluids through the vessels, it seems safe enough to use oil; and the old physicians used it, and medicated it, by adding squills and other drugs<sup>i</sup>. Simple oil of olives has been known to have an equally salutary effect, even in an ascites, which was cured by friction therewith, used  
night

<sup>z</sup> Lib. IX. Cap. 111. pag. 524.  
Pag. 244.

<sup>i</sup> Ibidem.

<sup>h</sup> Serm. X. Cap. xxviii.

night and morning for a month ; and on the third or fourth day after it began to be used, the urine became copious, and the swelling of the abdomen decreased every day afterwards<sup>k</sup>. Now the success in this case seems due to friction, and not to any peculiar virtues in oil of olives. Stools were procured by this means, without purges. But friction is not adviseable, if the swelling of the belly be very great, and the integuments be thin and stretched tight, and the breathing very laborious<sup>l</sup>; but when the swelling begins to decrease, the skin, being less stretched, is able to bear stronger and rougher friction.

There was another method, of a like effect with friction, in use among the ancients, which is scarce ever practised now, and yet seems safe and useful enough. Of this method *Aetius*<sup>m</sup> thus speaks, *experiri etiam Herodoti remedicem convenit, neque enim minus quam ipsa frictio auxiliari potest. Vericis itaque bubulis aut aliis magnis omnino, & probe inflatis ac vacuit, tumentes locus pulsato, atque id auctoritati tum Archigenis tum Herodoti facito inde enim citra molestiam caro condensatur neque dolore, neque percussione duriore resultante*; “ it is also adviseable to try the remedies “ of *Herodotus*; for it is not less useful than friction: “ taking therefore bladders of oxen, or other large “ bladders, blown up to their full extent with air, “ beat the swelling places with them. This both “ *Archigenes* and *Herodotus* advise; for by this method the flesh is rendered more firm and compact, “ without pain or bruise.”

By all these methods they hoped to obtain the end of setting in motion the stagnating fluids, and in consequence dissipating dropfical swellings, and at the same time avoided hurting the skin. I have often seen that the legs being rubbed without due caution, the

<sup>k</sup> Donald Monro, on the dropsy, pag. 30, 31. Nouvelle Bibliotheque Angloise pour les mois de Janvier & de Fevrier, 1757, pag. 107. <sup>l</sup> Storck ann. med. pag. 90. <sup>m</sup> Sermon. X. Cap. xxiii. pag. 246.



the skin has inflamed and mortified often dangerously, and always to the great suffering of the patient. Hence *Celsus*<sup>n</sup> treating of the cure of a dropsy, very prudently advises, *utendum frictione madefactis tantum manibus aquâ cui sal & nitrum & olei paucum sit adjectum, sic ut aut puerilis aut muliebres manus adhibeantur, quo mollior earum tactus sit. Idque si vires patientur ante meridiem tota hora, post meridiem semihora fieri oportet*; “friction must be used, the hands being  
 “only moistened with water mixed with salt and  
 “nitre, and a little oil; and that by the hands either  
 “of a child or a woman, as their touch is softer:  
 “and if the strength will allow, it may be continued  
 “a whole hour in the forenoon; in the afternoon  
 “half an hour.”

We see also, that the old physicians very prudently began with gentle frictions, lest the extravasated serum being all at once remixed with the blood, should oppress the lungs, and put the patient in danger of suffocation. *Hoffman*<sup>o</sup> has observed, that an œdema of the feet repelled into the habit by any cause, produced a great oppression and straitness on the breast. Nay, he saw in some patients who were taken with an ague, that as the cold fit began, a swelling in the feet disappeared, suddenly a prodigious difficulty of breathing followed; and sudden suffocation always ensued in the third fit, as soon as the shivering began.

Motion.] Mention has been made before, §. 28. of the excellent effects of motion for the recovery of health. Certainly by exercise the motion of the venous blood towards the heart is accelerated, and the circulation of the fluids may be quickened at will: whence in all times exercise and motion were reckoned among the remedies of dropsies. *Hippocrates*<sup>p</sup> enumerates,

<sup>n</sup> Lib. III. Cap. XXI. pag. 164.

<sup>o</sup> Med. Rat. & System.

Tom. IV. Part. 3. Cap. II. pag. 324.

<sup>p</sup> De victu acutor.

Charter. Tom. XI. pag. 174. Epidem. V. Charter. Tom. II. pag. 347.

merates, as the chief remedies for a dropsy, *labores fotum, & temperantiam*, “labours, fomentation, and temperance;” and for labours his word is *ταλαιπωριν*, which indicates hard and fatiguing labour, and he adds, that the patient ought to labour very much, and even to walk up steep places; but lest the lungs should be oppressed by violent and sudden motion, he adds a caution, *si vero difficulter spiraverint fueritque æstiva anni tempestas, ætas viguerit & virium robur adsit, sanguinem e brachio detrahere oportet*; “but if he have a difficulty of breathing, and it be summer time, and the man be in the prime of his age, and his strength be good, blood should be taken from the arm.”

The muscles swelling when they cut is pressed upon the cellular membrane, which not only lies upon the muscles, but is even interposed between their fibres; wherefore exercise may be useful in an anasarca upon this account, by moving the stagnating serum. Hence *Celsus*<sup>a</sup> advised much walking sometimes, and on this account thought that *facilius in servis quam in liberis tollitur*; *quia, cum desideret famem, sitim, & mille alia tædia, longamque patientiam promptius iis succurritur, qui facile coguntur quam quibus inutilis libertas est*; “it is more easily cured in slaves than in free persons; because, as it requires fasting, enduring of thirst, and a thousand other hardships, such are more readily relieved who are readily commanded, than they are who enjoy a hurtful liberty.”

But as the circulation of the fluids is accelerated by strong exercise, it is easy to see that this is not proper, if the circulation be already too impetuous from the concomitant fever; whence this author adds, *sed si febris quoque est, hæc imprimis submovenda est per eas rationes per quas huic succurri propositum est. Si sine febre aeger est, tum demum ad ea veniendum quæ ipsi morbo mederi solent*: “but if it be attended with a fever,

<sup>a</sup> Lib. III. Cap. xxi. pag. 161, 162.



a fever, that in the first place should be removed, by such means as have been prescribed for the cure of that distemper. When the patient is free from a fever, then we may apply the usual remedies of the dropsy."

We readily see that the same caution is to be observed here, that the stagnating fluids should not be suddenly set in motion by violent exercise. But we should begin by gentler motion, which is better suited to the strength of such patients, who are sometimes rather feeble; and at the same time the weight of the lower limbs in an anasarca, renders motion difficult. Whence *Trallian*<sup>r</sup> said, *porro motus si quid in hydropicis conducit, præcipue qui fit per mare equum lecticam; iis vero qui viribus constant, incessus per pedes est utilissimus*; "motion certainly is of as much service as any thing to dropical persons, especially in a ship, on horseback, or in a litter; but where the strength will allow, walking is most serviceable." Sailing on the sea is of service even to the weak, and its usefulness is confirmed by modern observations. Thus we read in *Forestus*<sup>s</sup>, that a dropical man given over by his physicians, and who was swelled not only in the belly, but in hands, feet, and face, went on ship-board, and sailed some miles out to sea: he vomited, and using exercise after the vomiting he recovered. It is well known, that they who are unaccustomed to the sea are subject to a grievous sickness and vomiting in sailing upon it. Now we shall see hereafter, §. 1244. that vomits are of great assistance in curing the dropsy. The use of sailing on the sea is confirmed by many observations<sup>t</sup>.

Heat.] It has been already observed, that in health the fluid exhaling into the cavities of the body is expelled from the arteries in the form of a steam,

VOL. XII.

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and

<sup>r</sup> Lib. IX. Cap. III. pag. 524. <sup>s</sup> Lib. XIX. Observat. 32. pag. 377. <sup>t</sup> Ebenezer Gilchrist on the use of sea voyages, pag. 88.

and re-absorbed by the veins before it condensed to watery fluid: Whence we see that physicians have always endeavoured to warm the body of dropical persons, in order to make the stagnating serum more moveable, and more disposed to rarefy into a steam which the re-absorbing veins would more easily imbibe. By friction and motion the warmth of the body is augmented: but besides this the ancients applied external heat, and that to no inconsiderable degree. *Aetius* <sup>u</sup> says, *maximam curandi rationem in insolationibus habeo: itaque tumefactæ partes ad solem exponantur, capite saltem velato, cavendo etiam ne tumores vehementius calefiat*: “ I expect great benefit in dropsy from the warmth of the sun: therefore let the swelled parts be exposed to the sun (only covering the head, and also taking care that the swelling be not heated to excess).”

He advised that the frictions themselves should be used either in the sun or at the fire: *aliquando & arena probe a sole ignita, aut pellibus similiter a sole ferventibus factis, ægrum occulere oportet, capite tantum velato, & facie cum spongia perpetuo abstersa*; “ sometimes it is adviseable to cover the patient with sand, well heated by the sun, or with hides also warmed thereby covering only his head, and constantly wiping the face with a sponge.” *Celsus* <sup>w</sup> advises similar methods; *evocandus est sudor, non per exercitationem tantum, sed etiam in arena calida, vel laconico, vel clibanis similibusque aliis, &c. balneum atque omnis humor alius est*; “ a sweat is also to be procured, not by exercise only but also by hot sand, or the laconicum (a kind of stove), or a dry bath, and such like means, &c. the bath and all moisture is hurtful. Dry warmth is required here; but after the water have been drawn off by tapping to prevent a relapse *paulatim revocandus est æger ad exercitationes, fricationes, solem, sudationes, fatigationes, & idoneos cibos, de-*

<sup>u</sup> Sermou. X. Cap. xxviii. pag. 244, 245.  
Cap. xxi. pag. 162.

<sup>w</sup> Lib. II



*nec ex toto convalescat* ; “ the patient must return gradually to exercise, frictions, exposure to the sun, sweats, toils, and proper diet, till he is quite well \*.”

## S E C T. MCCXXXVI.

**T**O answer the second intention (§. 1232.) we must find out the cause which straitens and obstructs the vessels, or bursts them; which cause is to be removed if possible, or it may often be corrected by the use of mineral waters.

We treated of the causes of a dropsy, §. 1229. and it was then also shewn, that many of them could not at all, or but with great difficulty be removed. If, for instance, a large steatomatous humour in the abdomen compresses the neighbouring veins, who will dare to hope a cure; when such a tumour, even in the external parts of the body, can scarce ever be removed but by the hand of the surgeon. On the other hand, when the swelling womb of a pregnant woman presses on the iliac veins, or the descending branch of the vena cava, the thighs and legs frequently swell prodigiously; but after delivery, when the womb contracts itself again, the pressure on the veins is removed, and an anasarca from this cause soon ceases spontaneously, or at least is easily overcome by gentle friction alone.

This seems to be the reason why a dropsy is sometimes cured by the use of mineral waters; that is, when the obstacles which impede the free motion of the lymph are removeable by these waters.

Abstinence from drink, as we shall see hereafter, is reckoned among the most efficacious means for the cure of a dropsy; so that it may be hurtful for such waters to be drank plentifully: but it is to be ob-

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served,

\* Lib. III. Cap. xxi. pag. 166.

served, that these waters are then only of use when the *vis vitalis* is entire, so as to be capable of circulating these waters through the habit, and discharging them by urine, sweat or stool: for if they remain in the body they increase the dropsy. Wherefore prudent physicians begin to make trial of them by a small quantity, which they augment afterwards if they find them agree with the patient, and that the discharge by urine answers to the quantity of liquor drank. For these salutary waters have a force of spirit perceivable by the palate, which soon flies if they be left in the open air; by means of which they are soon imbibed by the absorbent veins of the stomach and intestines, and easily moved along with the circulating fluids through the vessels. Certainly if a healthy man was to drink four pints of common water every morning, in a short space of time he would find himself incommoded: whereas a valetudinarian will drink a larger quantity of spa water without any inconvenience.

Many instances are related by authors who have written of the powers and uses of medicinal waters, which shew that the dropsy is sometimes cured by them. *Cocchi*<sup>y</sup>, who collected many cases, confirms this; and similar instances are to be found in other authors.

For as dropical persons generally make very little urine, if by drinking these waters the quantity of urine should suddenly be much augmented, sometimes these passages are so happily opened, that an entire cure ensues; and even in a dropsy though desperate before. A wonderful case of this kind (which *Cocchi* also mentions) is circumstantially related<sup>z</sup> of a man, who from high living was taken with the jaundice, and afterwards swelled with ascites. Several famous physicians tried various remedies without effect. When no hope remained

<sup>y</sup> De i Bagni di Pisa, pag. 265, &c. in notis:  
<sup>z</sup> *ψυχρολασία*, pag 457.



was carried to the mineral waters, and besought his wife to allow him this only consolation before his death, to quench his insupportable thirst by drinking as much of these waters as he chose: having obtained this leave, he drank a prodigious quantity of the waters in the space of five or six hours, without making a drop of water. A cold, clammy, sweat, and extreme faintness ensuing, made the by-standers put him into bed again, as they thought dead; but in half an hour, the urine began to flow in such a quantity, that he discharged full half the quantity of the water he had drank. This done he recovered his speech, and asked for a little strong wine, which having drank hot, he fell into a deep sleep, and all night he sweated, and the urine fell constantly from him by drops; and at the same time thin watery stools came from him, and he recovered. The physician who had attended him, and had given him over, was amazed at meeting, two years after, this man in good health, whom he thought to have been long in his grave. A dropsey following a jaundice is reckoned by physicians of a very bad kind, so that his cure was the more wonderful.

Something similar seems to have been observed by Hippocrates<sup>a</sup>; for where he treats of a universal dropsey, arising from drinking largely of stagnated rain-water, he recommends strong purges for the cure of this disease; and then adds, *potissimum verò ejus aquæ ex quâ morbus corripuit, quam plurimum propinato quo ejus ventrem turbet & multum dejiciat*; “but above all, give a great deal of that kind of water which occasioned the disease, that it may loosen his belly, and he may have many stools:” for although no mention is here made of medicinal waters, yet it appears that he attempted to expel, by copious draughts of water, the water collected in the body.

<sup>a</sup> De intern. affect. Cap. xxviii. Charter. Tom. VII. pag. 58.

## S E C T. MCCXXXVII.

**T**HE too great viscosity of the fluids is to be dissolved both in the warm and cold dropfy. (§. 1233, 1234.)

1. By the remedies there prescribed.
2. By alkaline salts, both volatile and fixed.
3. By mercurials, antimonial, and venereal remedies, well prepared by the chymist's art and skilfully administered by the physician.

It is indeed true, that the humours are sometimes found too much attenuated in a dropfy, and then such remedies as have a power of attenuating the humours are not needed. But by what was said in the section *de glutinosa spontaneo*, we see what are the diagnostics of this vitiation of humours: at the same time we understand, from the enumeration of the causes of a dropfy, what we are to think of too great a viscosity of the fluids. For if after copious hæmorrhages, and after drinking great quantities of water, a dropfy has suddenly arisen, and there is no reason to suspect that any viscera were obstructed, or that there was a viscid cachochymia, attenuating remedies are not indicated, but we should rather immediately endeavour to expel the load of water from the body, and then restore the strength by corroboratives. It is indeed true, that the watery serum collected in the cavities of the body may grow viscid by stagnation, but remedies are not likely to have any great efficacy on extravasated fluids, especially if they are collected in a great quantity. Nor is every kind of lentor or viscosity a bad sign; for Mons. *Du Verney* the younger<sup>b</sup>, (who has frequently been mentioned before) has observed that there

<sup>b</sup> Academie des Sciences l'An. 1703. Memoir. pag. 206, 207.



There are greater hopes of a cure, if the waters drawn out by tapping should prove in some degree mucilaginous; whereas, on the contrary, if they were like rain water, and left no sediment after evaporation, or but very little, the patients generally died.

But those remedies which dissolve viscosity, sometimes also are of use by evacuating, as will be seen hereafter, especially if they are given in large doses: but here we are properly to consider their attenuating and dissolving qualities, by which they are adapted to remove obstructions of the viscera, which are so often the cause of dropsies.

Heretofore, when we treated of a glutinous disposition arising spontaneously in the fluids, §. 75. it was shewn that much service was to be expected from increased motion for dissolving viscidities; wherefore all the remedies mentioned in the numbers cited in this place are useful to this end, inasmuch as they rouse the *vis vitalis*, which drives on the fluids through the vessels: and it was then noted from that class they are to be taken in the different species (that is in the hot or the cold kind) of dropsy.

Before, in treating of the cure of obstructions, §. 1235. alkaline salts, both fixed and volatile, were enumerated among attenuating and dissolvent remedies; and these we now use with the greater confidence, as *Boerhaave's* experiments<sup>c</sup> demonstrate that putrefaction is not promoted by these salts, as was thought heretofore. Volatile alkaline salts, such as the sal volatile oleosum of the shops, and such like preparations, were mentioned, §. 1233. as stimulators and increasers of motion; and they are at the same time justly had in esteem for their dissolvent property. But there are some plants which naturally contain a volatile alkaline salt, like that which chymists extract from various bodies. Onions, garlic, mustard seed, and several other plants called acrid antiscorbutics, contain plenty of a volatile alkaline salt, which is

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scarce

<sup>c</sup> Observations on the diseases of the army in the appendix.

scarce perceived so long as these plants are whole but when they are cut or bruised, it presently exhaling every way strikes the smelling, and by its irritation draws tears from the eyes, and twinges the tongue; and the efficacy of these and the like plants penetrates the whole body almost without any alteration. It is known that the breath, the sweat, and urine of men fond of garlic, have the smell of that plant; which is also deservedly accounted a diuretic and useful for that reason also. *Forestus*<sup>d</sup> mentions his having seen obstinate dropsies cured by the use of garlic only. *Sydenham*<sup>e</sup> declares, *quod sub allio, missis evacuantibus hydropem ex aliorum præscripto non suo depulsum noverit*; “that he knew of the dropsy “being cured (by the advice of others not of him “self) by garlic, without using evacuating remedies.” “dies.”

As these bulbous roots and seeds exhale this volatile substance as soon as they are cut or bruised it has been a custom among the vulgar to swallow garlic roots and mustard seeds whole, that being softened and macerated in the stomach and intestines, they may gradually exhale the volatile alkaline salt which they contain without any loss. A wonderful effect of remedies of this kind is recorded<sup>f</sup>: a woman of fifty years old had an ascites, which was not relieved either by purges or by diuretics; she had been thrice tapped, but swelled again; by the advice of an old woman, she took morning and evening a spoonful of mustard seeds whole, drinking upon them half a pint of the decoction of the green tops of broom; and in three days she found some relief, her very troublesome thirst being entirely appeased. She made at least five or six pints of water every day, and was sometimes purged for two or three days together by this remedy. She persisted in this method for

<sup>d</sup> Lib. XIX. Observat. 27. Tom. II. pag. 369.  
<sup>e</sup> *Hydrope*, pag. 633.

<sup>f</sup> *Mead monita & præcepta medica*, pag. 138.



for a year, and the dropsy never returned. It is indeed true, that broom is a plant famous for doing good in a dropsy; but it is very probable, that the mustard seeds contributed their share to the success in this case. Broom has a salt juice, and the ashes of this plant, or the fixed salt extracted from it, in making a ley, afford a remedy of great esteem in this disease. It is usual to infuse ashes of broom, or the salt of it, in wine, and to give  $\mathfrak{z}$ ij of this medicated wine twice or thrice a day: generally an ounce of the salt is infused in two pints of *Rhenish*, *Mosell*, or some such acid wine. When the ashes are used, a pound of them answers generally to an ounce of the salt. But the quantity of fixed salt in the ashes of broom is observed to vary according to the diversity of the soil: when this plant grows in sandy places on the sea-coast, it generally contains more of the salt than if it grew in a fatter or moister soil. The ashes and salts from bean stalks, wormwood, carduus benedictus, and several other plants, are recommended for the same purpose. But when fixed alkaline salts are infused in wine, there is produced a salt compounded of acid and alkali, and with a saponaceous quality from the oily particles of the wine united to it, very penetrating, and agreeing well with the body, and endued well with singular efficacy for dissolving viscidities, and removing obstructions. It is well known how deservedly the preparations called by the chymists *Tartarus regeneratus*, and *Terra foliata Tartari*, are commended; which are compounded of the acid of vinegar, and fixed alkaline salt of tartar, intimately united by a compleat saturation in such a manner, that neither the acid nor the alkali predominate. A remedy like these, and possibly still more penetrating, is produced, when spirit of sal ammoniac, which is volatile and alkaline, is united to that sufficiently volatile vegetable acid, the distilled vinegar of the shops: from the mixture and perfect combination of these two, there arises a very mild compound salt, which

does not even irritate the eye, (at least not when diluted with a little water) and gives no sort of disturbance to the body; and therefore is very safe to be used, both in acute and in chronical diseases, as a powerful dissolvent; and at the same time greatly promotes the excretions by urine and sweat. If these things be considered, no one will be surpris'd that physicians have such confidence in remedies of this kind for curing the dropsy, and removing the most frequent causes of dropsies, that is to say, obstructions in the viscera.

Sometimes they have successfully combined volatile, fixed, and alkaline salts, with the corroborating power of steel, for the cure of a dropsy. Thus we read<sup>z</sup> that an ascites, accompanied with an anasarca of the thighs and legs, a difficulty of breathing, a great thirst, together with a quick weak pulse, was cured by drinking every day four ounces of a beer, in twelve pints of which were steeped a pound of ashes of broom, with two ounces of mustard seeds, and four ounces of steel filings; and the effect was so sudden, that after the first dose the patient made twenty pints of water; and by continuing to use this drink, and taking physic between whiles, this patient recovered.

3. It is known that various remedies are prepared from mercury, antimony, and copper, which most powerfully set the body in motion, and evacuate upwards and downwards. But here we are not treating of that property of these remedies, by which they are wont to expel the water collected in the cavities of the body, but rather of their efficacy in dissolving viscidities, and thereby removing those obstacles in the vessels and viscera which gave rise to the dropsy. But these viscidities being dissolved, there sometimes follow profuse evacuations, especially by sweat and urine, sometimes, but less frequently, by stool; and that greatly to the relief of the patients, their strength in-

<sup>z</sup> Medical Essays, Tom. V. Part 2. pag. 639.



increasing instead of sinking by them. For in this case these evacuations are not produced by the stimulating power of the remedies, but the obstacles being removed or much lessened, Nature, who so often is her own physician, expels by various passages the load of water from the body.

Salivation, excited by mercury, dissolves all the humours in such a manner that the whole habit is emaciated, although prudent physicians endeavour to prevent the humours going off by stool, as they are rendered so acrid to ulcerate all the mouth, and might affect the intestines in the same manner. However, a dropsy was cured by salivation in a man of thirty years old, who had both an ascites and an anasarca; and as the anasarca remained after tapping, and yielded to no remedies, salivation was tried with so good success, that the dropsy entirely disappeared, and the man recovered perfect health<sup>b</sup>. I spake on another occasion, (§. 135. 4.) of this wonderful dissolving property of quicksilver, when I treated of the cure of obstructions.

Great care is necessary in composing these metallic preparations, and great discernment and sagacity in administering them. On this account I used to make the most difficult myself, or trust the preparation of them at least to none but those, in whose fidelity and chemical skill I could entirely trust. But I did not do this with any view to dispense known remedies under the name of *arcana*, or for sordid gain, to conceal any peculiar efficacy which I had discovered of which others were ignorant, for I immediately revealed any thing useful that I knew. I have seen, with great indignation, physicians (unworthy of that name) in books written in their mother tongue, obtrude their wares on the ignorant vulgar at a set price, to satisfy their avarice by these shameful arts. Her majesty the Empress Queen rewards with honours and wealth those who invent something new  
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<sup>b</sup> Académie des Sciences l'An. 1703. pag. 174.

and useful in the art, but has prohibited in her dominions those shameful treatises, whereby credulous men might be deceived and injured, always in their pockets and sometimes in their health. But this, by the by.

For this purpose these remedies are usually prescribed in such small doses, or so mitigated by various preparations, that they do not all irritate the stomach and intestines; or so gently, as to excite neither vomits nor stools, although the same remedies in larger doses, or prepared in a different manner, have a violent emetic or cathartic efficacy on the body. Many *formulae* are to be found for this intent in our author's *Materia Medica* under this head, where mercurials are prescribed in a very small dose, and the emetic power of antimony is blunted and rendered exceeding mild. Such seems to have been the *præcipiolum* of *Paracelsi*, of which *Van Helmont* makes such boast<sup>i</sup>, saying, *curat omnem hydropem, non quatenus purgat, sed in quantum materialiter transiens per intestina revolvit extravasatum cruorem. Sin autem vomitum vel alvum cieat, id hydropi est per accidens*: “it cures all dropxies, not by purges but  
 “by passing in substance through the intestines, and  
 “dissolving the extravasated humour. But if it excite  
 “vomiting or stools in a dropxy, that is merely accidental.” And it appears that he did not approve of this remedy for its purging quality, as is plain from what he says a little after, when he recommends white briony root for a dropxy: *quocirca vim hydragogi in brionia proficuum attende, in virtus solutivum ab ea abstuleris*; “wherefore briony will be useful as a hydragogue,  
 “if its purging quality be taken off.” In the same manner he commends antimony first dissolved into a fluid, and then reduced to a powder, but only as a sudorific, for these are his words; *haberi remedium, quod omnem hydropem modeste tollit absque metu recidivæ*; “we have a remedy which gently removes  
 “all dropxies, without any danger of a relapse.”

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<sup>i</sup> In capitulo ignotus hydrops, §. 39, & seq. pag. 416, 417.



Concerning *Paracelsus's Præcipiolum* he says, that it is hard to be procured; but that two grains are enough, repeated three or four times. Concerning the preparing of this remedy he has the following expressions<sup>k</sup>; *id autem ut pro voto succedat oportet mercurium mori, absque ullo salium externorum sodalitie, aut spirituum aliorum consentio. Sic tamen convenit mori ut vivum maneat in plaustro, quod queat in vita media mercurii deferre ad loca destinata. Gratulor illi quem ignis docuit me intelligere*; “that we may obtain our purpose  
 “in this preparation, the mercury must be killed,  
 “without any combination of external salts, or con-  
 “comitance of foreign spirits. But it must be so  
 “killed as to remain alive in a chariot, which may  
 “be able in this half life of the mercury, to bear it  
 “to its destined place. I congratulate him, whom  
 “experiments in the fire have taught to understand  
 “me.” Now from what was said, §. 135. N<sup>o</sup> 4. it appeared that mercury, without any thing being added to it, might be converted into a powder of an acrid metalline taste, by digestion or repeated distillation alone: but the powder produced in this manner from quicksilver by a strong fire only, is almost totally changed again into quicksilver, and loses all its acrid taste. Hence it seems probable enough, that the *Præcipiolum* of *Paracelsus* was a powder of this kind. I have known it produce effects not to be despised in a dropsy, and in other difficult diseases: I have seen a single grain given alone, with purging physic, cure a very bad ulcer on the tongue; but it excited such a commotion in the body, that the patient was very faint for two days after taking it.

But although this mercurial preparation is not undeservedly commended for its singular efficacy, yet a similar effect has sometimes been observed from other officinal preparations of mercury. Thus an ascites, accompanied by an universal anasarca, was cured by a few doses of *mercurius dulcis*, which were followed  
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<sup>k</sup> In capitulo ignotus hydrops, §. 39, & seq. pag. 417.

by a copious discharge of urine <sup>1</sup>. A like effect has been observed from emetics given in very small doses, and especially if opium was added to them. <sup>m</sup> Copper dissolved in a volatile alkaline spirit, and given in such a quantity as not to raise any commotion, has sometimes been of signal service. <sup>n</sup> This useful method of giving violent remedies in so small a dose as to occasion no disturbance, seems to be of great moment in the cure of a dropsy, and in other chronical and difficult diseases; and is not only proper with regard to mineral, but also to vegetable preparations. There are many plants suspected of poisonous qualities, which perhaps after various preparations, or given in a diminished dose, may be safe and useful. Many of the ancient physicians were afraid of the juice of poppies; *Paracelsus*, by a bold use of it, got great reputation. The cicuta was quite in disrepute for its deleterious quality; and we owe to the ingenious Dr. *Storcke*, physician to the Empress Queen, the knowledge that it may be given without injury, even in no inconsiderable quantity; and that it is of great efficacy in the cure of cancers, both internal and external. It seemed indeed scarce probable, that a plant growing almost in all countries, should have been created only for the destruction of mankind. The ancients used hellebore for the cure of very difficult diseases; but in such a quantity, that it did not purge the body without bringing the patient in danger of convulsions, and even of death: for they applied a remedy as terrible as the disease, when they prepared the body by baths and other methods to support the force of such violent drugs. The learned dispute, whether the *hellebores* of the ancients are known by us. It is certain that those plants, to which we at this day give the name *hellebore*, are of great efficacy when fresh, and not grown carious by having been long kept. It has been

<sup>1</sup> Donald Monro on the dropsy, page 62.  
52. <sup>n</sup> Boerh. Chem. Tom. II. pag. 478.

<sup>m</sup> Ibidem, pag.



been observed, that the black hellebore of the shops given in a moderate dose, has a signal diuretic efficacy for the cure of a dropſy °. From white and black hellebore, and ſometimes from black hellebore alone, *Gefner* <sup>p</sup> made his *Oxymel Helleboratum*, whoſe excellent properties he deſcribes in a letter to *Adolphus Otto*: he made uſe of two ſuch oxymels, which he calls the *Majus* and *Minus*, greater and leſs, and he ſays that he gave a very ſmall doſe of the oxymel minus in *Cretan* wine (repeated the doſe five or ſix times) to his own mother, when ſhe was much advanced in years, and dangerously ill of an aſthma, with ſuch ſucceſs, that ſhe grew better preſently, and ſeemed returned from death to life. And he has publiſhed a little treatiſe, in which he diſcourſes of aconite, and at the ſame time deſcribes his two oxymels. <sup>a</sup> He ſays of it, *hydropicis & cachecticis illico profuiſſe, aſthmate ſimul & ſiti remiſſis*; “ it gave relief to dropſical and cachetic perſons, the aſthma and thirſt “ decreaſing preſently.” It is true indeed, that he combined many other remedies with this compoſition, as was the cuſtom of phyſicians in the ſixteenth century: however, he ſeems to aſcribe the chief efficacy of theſe preparations to the white hellebore. For he ſays <sup>s</sup>, *nec eſt quod quiſquam ab helleboro albo abhorreat, cum tam modice & tam parva doſi ſumatur; & ego tali modo quotidie & feliciffime in meis ægris utor*; “ nor need any one fear any miſchief from white “ hellebore, when taken ſo moderately and in ſo “ ſmall a doſe; and I myſelf uſe it in ſuch a manner with good ſucceſs for my own patients.” How happy would it be for mankind, if phyſicians would follow the ſteps of ſuch great men, and try with caution what ſmall doſes of efficacious remedies, which in large doſes, are reckoned hurtful, are capable of doing.

## S E C T.

° Freind's Hiſtory of Phyſic, Part II. pag. 105.

<sup>p</sup> Epit.

Med. Conrad. Gefner, pag. 48. verſa & 49.

<sup>a</sup> Conrad. Gefner

de aconit. & oxymelle helleboriato, &c. pag. 21.

<sup>s</sup> Ibidem,

pag. 26.

<sup>s</sup> Ibidem, pag. 27. verſa.

## S E C T. MCCXXXVIII.

**T**HE waters collected in the cavities are drawn from thence, 1. By tapping. 2. By making new channels for the discharge of the tumours. 3. By urine. 4. By vomit. 5. By purging. 6. By dispersion.

Three general indications in the cure of a dropfy were enumerated, §. 1231. Hitherto we have treated of the first, which is the procuring an unobstructed flow to the lymph: the second indication follows next, which is to draw off the waters from the cavities where they stagnate. This drawing off the waters is effected two ways; for either an issue is procured for them, by piercing the place where they lodge; or, being re-absorbed and mixed with the circulating fluids, they are expelled by vast passages from the body.

1. By puncture, an issue is made for the water collected in the larger cavities of the body. §. 1218. it was shewn how little was to be hoped from puncture, for the cure of an hydrocephalus. From what was said, §. 1219. it appeared, better success might be hoped from this operation in a dropfy of the breast. Under the next aphorism we shall treat of the paracentesis of the abdomen, for the cure of an ascites; and the paracentesis of the scrotum, in a hydrocele will be considered, §. 1252.

2. But when the water is lodged in the smaller cavities the paracentesis does not take place; but a wider wound made by caustics, or blisters, or the part should be pierced with several punctures in such a manner, that the water collected in the adipose membrane may have a free issue; and this method is useful principally in an anasarca, of which thing we shall speak, §. 1252.

3. This



3. This discharge by urine cannot be obtained, unless the watery serum collected in the cavities be re-absorbed, and afterwards secreted by the kidneys: by what method and remedies this is to be obtained, will be seen §. 1243.

4. It is obvious that the collected water cannot be discharged by vomit, unless it get into the cavity of the stomach; and to that end it must first be taken up again into the circulation. But as they are much more easily discharged by stool, urine, or sweat, therefore, §. 1244, where we treat of vomits, we insist on that effect of vomits principally, which results from the concussion of the muscles in vomiting, by which the stagnating fluids may be dissolved, set in motion, and expelled; and thus frequently the obstacles be happily removed, which gave rise to the dropsy. And emetics, especially the more violent sort, generally give stools also.

5. We easily see that water stagnating in the cavity of the abdomen cannot be evacuated by stool, unless it be first resumed into the circulation by the absorbent veins. On this account we shall find (1247) strong purges recommended, which not only evacuate but dissolve, and agitate vehemently; therefore they are to be given in repeated doses, with short intervals between the doses, as the patient's strength will bear.

6. This method seems sufficiently safe, as it scarce excites any disturbance in the body; but it is very troublesome to the patients, and few have the constancy to support it. For by exciting a great heat, the stagnating water is rendered more apt to be re-absorbed; and as this heat promotes also perspiration and sweats, there is hope that all the superfluous fluid thus re-absorbed, may be exhaled by the pores of the skin. Of this we shall treat §. 1248, but in the use of this method thirst must be patiently endured, and dry food be the only diet, lest the water, which heat had dispersed, should be returned again

to the habit. Hence this method may rightly be called a drying of the dropfical body, of which we shall speak §. 1449.

But as unwearied patience is necessary, *Celsus* had good reason for saying, that slaves who can be compelled to endure all requisite severities, are more easily cured of the dropsy than free men. *Si enim ex toto sibi temperare non possunt, ad salutem non perducuntur*; “ for if they cannot entirely command themselves, “ it is impossible to restore them to health.” \* And a skilful physician, a disciple of *Chrysippus*, very justly asserted, that a man who had but a slight degree of a dropsy could not recover, because he was notoriously intemperate. And when another physician, *Philip* of *Epirus*, promised a cure, he ingeniously replied, “ I regard the disease only, but I “ consider also the man’s disposition;” and the event confirmed the justice of the observation <sup>u</sup>: *ille enim cum summa diligentia, non solum medici sed etiam regis, custo diretur, tamen malagmata sua devorando, bibendoque suam urinam, ad exitium se præcipitavit*; “ for “ although he was diligently watched not only by “ his physician, but by the care of the king *Antigonus* himself also, yet by eating his malagmata <sup>w</sup>, “ and drinking his own urine, he hastened his death.”

It is easy to see that this method can take place only where the strength is not gone, nor the disease of very long standing; for if, for instance, the abdomen be prodigiously distended, scarce any hope of re-absorption remains; and at the same time there is room that heat may dispose the stagnating water to putrefy, by which means the viscera would soon be corrupted and death ensue; and that so much the sooner, as in this method of cure all drink is refused to the patients, or at least granted very sparingly;

\* Lib. III. Cap. xxi. pag. 161.      <sup>u</sup> Ibidem.      <sup>w</sup> *Celsus*, Book V. Chap. xvii, xviii. where may be seen in what these compositions differ from plaisters, and that they consist of various ingredients compounded without any heat.



so that whatever putridity may have arisen from long stagnation of the fluids, and increased heat, cannot be diluted nor washed off from the body: which justifies the remark of *Celsus* \*; *inter initia tamen non difficilima curatio est, si imperata sint corpori quies, sitis, inedia: at si malum inveteravit, non sine magna mole discutitur*; “however, at the beginning the cure is “not very difficult, if rest, thirst, and fasting be “strictly enjoined; but if the disease has continued “long, it is not removed without great trouble.” Now although motion is in general useful for drop-sical persons, yet they cannot bear it, when they must endure thirst and fasting at the same time. At this day absolute fasting is not usually enjoined, but the patients sometimes live on biscuit only, as we shall see hereafter.

## S E C T. MCCXXXIX.

**I**F the cause of an ascites be recent, and suddenly operating without; if the strength be entire, the body youthful, the viscera in a good state, and not impaired by some other disease; if the water be not putrid, and has stagnated in the cavity long, the operation called the paracentesis should be performed without delay.

We have seen already, §. 1219. that water lodged in the thorax has been drawn out from the breast by tapping, with good success. When, therefore, a like collection of water was lodged in the cavity of the abdomen, it was natural to think of drawing it out from thence by the like means; for nature herself has sometimes pointed out this method. There are many instances in *Shenck* † of cases, where the navel first becoming protuberant, and afterwards burst-

\* Ibidem. † Observat. med. Lib. III. Observ. xviii.  
pag. 439.

ing, the waters have flowed out, and health has been perfectly restored; and one in particular of a man of sixty years old, to whom this happened, and who was perfectly cured of the dropsy, and died past seventy of another disease. The like instances are to be found in *Forestus* <sup>z</sup>. A woman was so swelled with an ascites, that the great Dr. *Mead* pronounced the disease incurable, as her strength was gone; but the abdomen bursting spontaneously, there issued twelve pints of water; and the next day, by a second rupture, six pints came out: both these openings were made, not at the navel itself, but near it. This patient however was so faint, and as it were just expiring, that the doctor ordered a cordial, and foretold that she would soon die: but two months afterwards, to his surprize, he saw her alive, quite cured of the dropsy, and the openings in the belly were closed up of their own accord; which made him apply the old adage, *mulieri quidem ne mortuæ quidem credendum esse* <sup>a</sup>.

It should seem therefore, that art may follow, and imitate the method pointed out by nature: yet physicians are not unanimous in their opinion of the usefulness of tapping; for, as it has sometimes happened, that from the neglect of proper cautions, some patients have died presently after the operation; and that the abdomen in others has swelled again, and that pretty soon after, by new water accumulating there. And as they considered, that tapping did not remove the disorders in those bowels, which gave the first rise to the dropsy, there have been many who condemned this operation as hurtful, and others who rejected it as useless.

In *Cælius Aurelianus* <sup>b</sup> we find collected, the different opinions of those who condemned tapping; and he well refutes the sentiments of those who con-

<sup>z</sup> Tom. II. Lib. XIX. Observ. 33. pag. 379.  
Præcep. med. pag. 152.

<sup>a</sup> Monit. &  
<sup>b</sup> Morb. chron. Lib. III. Cap. VIII.  
pag. 478, & seq.



demned this operation, and then inveighs against them in these terms; *omnes enim paracentesi curatos ut diunt mori, apertissimè mentiuntur: nos enim quosdam vidimus evassisse: plurimi vero moriuntur si quidem medicorum tardante consilio serus paracentesis adhibetur*; “that all persons, on whom the paracentesis is performed, die (as they say) is a manifest falshood: “very many do indeed die, because through the “hesitation and delay of the physician, recourse is “had to this operation too late.” Besides, he well remarks, that although the cause which first produced the dropsy, be not removed by tapping, yet many troublesome symptoms of the disease are abated thereby. And, as in other diseases, physicians are used to administer many remedies, which regard not the causes but the symptoms, there is reason why tapping should not be applied for the same purposes. *Hippocrates*<sup>c</sup>, treating of the cure of an ascites, advises, if other remedies and proper diet are of no effect, that the water should be let out by cutting; and he would have this done about the navel backwards, about the flanks, and then says, *inde vero pauci etiam evadunt*; “hereby some few persons recover.” Nor did *Sydenham*<sup>d</sup> approve of tapping; for after he had expressed his dislike of vesicatories, from the fear there is of a mortification, he adds what follows, *neque aut feliciori cum eventu aut minore discrimine, administrantur sive paracentesis sive acupuncturæ a nonnullis celebratæ, quam vesicatoria*; “nor with happier success or less danger, in my judgment, is “tapping performed, than vesicatories are applied.” I well know, that several other physicians, of no mean note, place little hopes in this operation; and some of them absolutely condemn it. It will appear, I hope, from what shall follow, whether or not they have reason on their side.

<sup>c</sup> De affection. Cap. vi. Charter. Tom. VII. pag. 627.

<sup>d</sup> De Hydrope, pag. 635.

Certainly *Celsus*\*, after he has spoken of the cure of this disease, directs thus, *si per talia auxilia venter non siccatur, sed humor nihilominus abundat, celeriori via succurrere ut is per ventrem ipsum enim emittatur*; “if by such remedies the belly is not dried, but the water notwithstanding abounds, a more speedy method must be taken to relieve, that is, to discharge it by the belly itself.” He confesses, that *Erasistratus* condemned the paracentesis, because he thought the only cause of a dropsy, was a vitiated liver: wherefore he adds the following judicious remark, *tamen aqua nisi emittitur quæ contra naturam ibi substitit, & secinori, & cæteris interioribus partibus, nocet*; “yet unless the water, which stagnates there preternaturally, be discharged, it will injure the liver and the other internal parts:” nor did he expect a cure of the dropsy from tapping alone, nor thought that all dropical persons could be recovered by this method; for he confesses, *corpus nihilominus esse curandum. Neque enim sanat emissus humor. Sed medicinæ locum facit quam intus inclusus impedit. Ac ne illud & quidem in controversiam venit, quasi non omnes in hoc morbo sic curari possint*; “care should be taken nevertheless to cure the whole body; for discharging of the water does not work a cure, but makes room for the operation of medicines, which that obstructs while it remains there. Neither does this admit of any dispute, that all in this disease are not to be thus treated.”

All who have wrote on the dropsy agree, that the water lodged in the cavity of the abdomen must be removed from thence: but all are not willing to adopt the speedy method of *Celsus*, that is, to pierce the abdomen, and let out the water by the wound. Thus endeavouring by emetics, strong hydragogue purges, diuretics, &c. to evacuate the water but by thirst, and great heat, to dissipate them, not without great inconvenience

\* Lib. III. Cap. xxi. pag. 165, 166.



to the patient, so great that not all persons can or will submit to it; while in a short time, without any considerable pain, and without danger, the same end may be attained, if this operation be skilfully performed: for only the common integuments, the abdominal muscles, and the peritonæum, are pierced; the water in the cavity of the abdomen keeps the peritonæum apart from the viscera, so that we need not fear, lest we should wound the viscera by the instrument. Besides, the trocart needle is presently drawn out again, and only a hollow obtuse pipe remains in the cavity of the abdomen; so that the waters flowing out, when the abdomen is contracted, either spontaneously or by the means of bandages, there cannot even then be any fear of injury being done to the viscera. The wound is small, and becomes almost imperceptible, when the integuments of the abdomen corrugate on the discharge of the water, and often heals the operation of the paracentesis, therefore is not dangerous of itself; and it soon draws off the water from the abdomen either all at once, or (if the physician thinks this way the best) by puncture repeated at intervals; of which we shall speak under the next aphorism.

If, from the abdomen not being sufficiently braced, or from any other cause, the patient grows faint, and swooning is apprehended, the end of the canula may presently be stopt up with the finger, till wine or some cordial be given to support the strength.

Do not emetics and strong purges, often repeated, and even strong diuretics, offend the body more than so slight a puncture? All those remedies can then only be of service, when there is yet a possibility of re-absorbing the water lodged in the abdomen: unless this can be done, they take away nothing of the watery load, but only diminish the quantity of healthy fluids. It is indeed true, that by the dissolving power of purges and diuretics, and by the

violent concussions of a vomit, obstructions in the viscera, which occasion a dropsy, are sometimes removed: but it is equally true, that the viscera, when they have been long soaked in the water, and rendered tabid and unsound, may be torn by these violent agitations. It is equally true, that hydragogue purges may dissolve the texture of the blood, and that too great a tenuity of the fluids is one cause of a dropsy. No one can suppose, that schirrous obstructions in the viscera, which so often occasion a dropsy, can be dissolved by these remedies; so that there will be need of other means of cure (if any cure be possible) after the waters are drawn out. May not a better effect be hoped from such remedies, if they are administered before the strength is repaired by the violent operation of purges, &c.?

I think, if any person examines the matter without prejudice, he cannot doubt that it is safer to draw off the water in an ascites by tapping, than by strong emetics and cathartics.

What then can be the reason, men famous in our art have condemned it, nay, have affirmed, that it hastens death? The answer is easy: they performed this operation after they had in vain tried other methods; after the patient's strength was sunk, and the viscera, soaked in half putrid water, were corrupted. This opinion has been almost universal, that every thing should be tried before tapping.

Hippocrates<sup>†</sup> himself says, *si igitur a medicamentis, & reliqua victus ratione juvetur, & venter molliatur, & in minus sectione facta aquam educere oportet*; “if by remedies alone the patient finds relief, and the belly grows soft, it is well; but if not, making a wound lets out the water.” It is not therefore strange, that few should escape. Cælius Aurelianus<sup>‡</sup>, although he acknowledges that of the remedies against dropsies, says, *alia vesicam commovent, alia intestina*

<sup>†</sup> De affect. Cap. vi. Charter. Tom. VII. pag. 627.    <sup>‡</sup> Lib. III. Cap. viii. pag. 471.



*intestina lacerando ulcerunt, vel dysentericam faciunt pætionem; alia stomachum vertunt, & fastidium generavit sibi & sitim extendunt;* “some offend the bladder, “others irritate and ulcerate the intestines, or occasion a dysentery; others turn the stomach, or “cause a loathing of food, and increase the thirst:” yet advises violent remedies, such as the hellebores, euphorbium, squills, &c. and he subjoins, *at si ex his humor detrabi non potuerit oportebit tanquam alienum paracentesi auferre;* “if there is no diminishing the “water, then (as being foreign to the body) it “should be let out by puncture.” However, he defended the usefulness of tapping, against its opponent, as we have seen a little above. *Tulpius*<sup>a</sup>, who certainly was not favourable to it, but rather considered it as seldom useful, and often hurtful; yet, with his usual candour, confesses, *consumitur plerumque tantum temporis in medicamentis aquam per alvum ducentibus, ut vix cogitetur de scalpello, nisi ubi viscera jam sunt præ morbi longitudine vitiata;* “so much “time is consumed in the use of remedies which “draw off the water by stool, that puncture is scarce “attempted, till the viscera are injured by the long “duration of the disease.”

*Celsus*<sup>i</sup> acted more prudently, when he endeavoured, by motion, a discutient malagma, and bound on with rollers, to dissipate the water of the ascites. If the liver or spleen were affected, he applied just over them a mellow fig bruised, with the addition of honey. If no good success followed these applications, he took the more speedy method of relief, by discharging the water immediately from the belly: but he says nothing of using violent purges in an ascites before puncture was tried.

But when the belly is not yet swelled to an immoderate size, and the disease young, it will be right to try powerful remedies, in the hope that the waters may

<sup>a</sup> Observ. med. Lib. II. Cap. xxxviii. pag. 254. <sup>i</sup> Lib. III. Cap. xxi. pag. 165.

may be evacuated by various passages from the body; and indeed the patients themselves are not willing to undergo the operation, till other methods have been tried without success. But this caution cannot be too much inculcated, that we should not persist very long in the use of evacuating remedies, if the swelling does not decrease, but remains as it was, or grows bigger. *Celsus's* advice merits our regard<sup>k</sup>; *commodum est etiam lino metiri ventrem quotidie & qua comprehendit alvum notam imponere: postero quoque die videre plenius corpus sit. Id enim quod extenuatur medicinam sensit: neque alienum est metiri & portionem, ejus & urinam nam si plus humoris excernitur quam assumitur, ita demum secundæ valetudinis spes est;* “ it is convenient likewise to measure the belly every  
 “ day with a thread, and to put a mark on it where  
 “ it meets: and each succeeding day to observe,  
 “ whether the bulk be enlarged or diminished; for  
 “ that which lessens, feels the effect of medicine.  
 “ Nor is it improper to measure the patient’s drink  
 “ and his urine; for if more moisture is excreted  
 “ than is taken, in such a case there is hope of re-  
 “ covery.” It is therefore better to have recourse early to tapping, than exhaust the patient’s strength by violent remedies. *Hippocrates* directs<sup>l</sup>, *hydropicos cito secandos esse*; “ that dropical patients should be  
 “ soon cut.” But if after long diseases and frequent returns, a dropsy should arise, he absolutely forbids the operation<sup>m</sup>.

But this operation is then most safely performed, and with the most rational hopes of success, if the dropsy be occasioned not by any disease which has impaired the bowels, but from a recent external cause suddenly operating on the body, till then in good health; as when, for example, too great a quantity of cold liquor is hastily drank, (see §. 1229.) and the abdomen from this cause swells suddenly, then  
 certainly

<sup>k</sup> Ibidem, pag. 163.

<sup>l</sup> Foësius, Tom. II. pag. 1195.

<sup>m</sup> De intern. affect. Cap. XLVI. Chaister. Tom. VII. pag. 672.



certainly the water may with greater safety be let out by tapping, before the parts are more distended, and the viscera compressed by its stagnating long in the cavity.

Here, however, as in all other methods of cure, caution is necessary, lest, if the operation be rashly undertaken, death should ensue; or at least, that the physician should not seem to have killed him who could not have recovered. For this reason, the circumstances are here enumerated, whose presence will assure the physician, that not only relief, but a cure may be expected from the operation of a paracentesis, and that it will be attended with no danger to the patient. If all these circumstances concur, there is undoubtedly no manner of danger: but it very rarely, or scarce ever happens, that a dropsy attacks a young robust person, without any disorder of the bowels, or any other distemper having preceded, unless this disorder takes rise from an external cause suddenly operating on the body. Therefore, if all these conditions were necessary to warrant the operation, it could hardly ever take place. Heretofore (§. 1230.) those symptoms were recited, from which the physician might foresee what would be the event of a dropsy: and if all the good symptoms met together, then, *securissimè sanus fieri poterit*; “the patient may certainly expect to recover:” but if not all, yet, *si plurima ex hisce habeat spes est, superstes evadat*; “if he have many of these, there is hope that he may escape.” The same observation is in force in deciding concerning the paracentesis: for if many of the good signs be present, although not all, yet it may be tried with some hopes of success; and the event has often shewn, that it was useful even to such persons as appeared irrecoverable. A young woman had an ascites, which gradually increased for three years to such a degree, that it was feared the belly would burst; her whole body was emaciated; but as, by the distension of the parts from the water, she

she suffered intolerable pain, she was desirous of being tapped, in hopes of ease, as else she must waste away, and die a lingering death from constant torments. Dr. *Mead*, although he pronounced that the operation could not be performed without extreme danger, yet, overcome by her intreaties, consented<sup>n</sup>. The abdomen being pierced, sixty pints of a clear humour, void of all stench, were drawn out at once: her strength increased daily, the dropsy never returned, and ten months after she bore a healthy male child, and had several children afterward. Who would have thought, that in a dropsy of so long standing, the waters were not grown putrid? Who would not have feared that the viscera, so long soaked in it, should not have been, if not quite corrupted, yet have lost their tone and firmness? Yet her strength returned; and in a month after, she was capable of conceiving a child, of nourishing it in her womb, and bringing it happily in its full time to the birth.

This operation has not always however (nay indeed very seldom) so happy success, as that not only the water should be discharged, but that there should be no relapse. Sometimes morbid causes lie concealed in the viscera, which do not shew themselves, till after the water is let out, especially if the physician does not see the patient till the belly is remarkably swelled. It has often happened to me, that after tapping, I have felt hard swellings in the belly emptied of the water, which persuaded me that the dropsy would return; yet I did not repent having advised letting out the water.

For a signal relief is procured to the patients: and although the letting out the water does not cure, yet it gives room for remedies to operate. I tapped one woman three times: although I plainly felt such hard swellings she survived almost four years, and that in tolerable ease, and in a capacity of doing her usual

<sup>n</sup> *Monita & præcepta medica*, pag. 150.



usual household work; and undoubtedly would have lived longer, if she had not died of another cause; for her husband, tired of an unhappy life, hanged himself, and his wretched wife not suspecting any such thing, going into his bed-chamber, found him hanging, and presently fell into a syncope, which was followed by a violent fever, which soon killed her.

Tapping is therefore useful, although it does not remove the cause of the dropsy; nay, although the cause be unsurmountable, and such as brings on frequent returns of the dropsy, for the paracentesis may also be frequently repeated. Certainly, when a disease is incurable, it is no small point gained to abate considerably the uneasiness and pain of it, and to prolong life. From numerous instances for our purpose, it will be sufficient to select one. A man 49 years old, labouring under an ascites and an anasarca at the same time, was so far cured by Dr. Storck, with wine of squills, that he returned to his accustomed labours; but there still remained a hard swelling in the epigastric region. The physician tried various remedies, but the patient neglected his directions; the disease returned, and would no longer yield to remedies. The operation being performed, an hundred pints of muddy water were drawn out, and the swelling in the epigastrium was perceived to be much more extended. Various things were tried without success; and a month afterwards, fear of absolute suffocation made tapping again necessary: nearly the same quantity of a like fluid came out. This puncture was obliged to be repeated monthly seven times more. For a fortnight he seemed somewhat better, but he swelled again prodigiously: weakness, loss of appetite, feverishness, and sweats, dissuaded repeating puncture the eighth time, which the unhappy sufferer however resolved to undergo, fearing suffocation, or bursting of the belly: almost an hundred pints were let out, which relieved him indeed

indeed for the present; but his strength gradually sinking; he died °. On opening the body, the omentum was found hanging down even into the pelvis, and changed into a thick bag; which inclosed a steatomatous swelling, which weighed three medical pounds. In the cavity of the abdomen was no water, but a great quantity of red foetid liquor in this bag.

A cause producing so frequent returns of so great a dropfy, the needle must have pierced the bag at the omentum to let out the water; and yet life was prolonged many months in a man just ready to be suffocated, and his insupportable anxiety was removed.

Nor is it easy to determine what number of these operations persons who have an ascites may bear, and receive relief from them, before they sink under the incurable disorder of the corrupted viscera. A *Swiss* foldier bore tapping fifty-seven times, in the space of twenty-one months; the dropfy returned so fast, that it required the operation to be repeated every eleventh or twelfth day: for the lymph was so readily and speedily extravasated into the cavity of the abdomen, that various qualities were observed in the water let out, corresponding to the variety of aliments taken by him. If he had eaten chervil and cresses the waters were green; they turned red after he had been drinking red wine, and were more limpid after he had been drinking white wine, and had a strong smell when he had eaten garlic and onions <sup>p</sup>. A widow lady, who fell into an ascites when she was fifty, underwent tapping yet oftener. It was performed monthly, and the first year four pints were drawn out at each time: the second year forty-eight pints collected, and were discharged every month: the third year the quantity was so far diminished, that only twenty-four pints came out monthly

° De Haen. Rat. Medend. Tom. IV. pag. 87. Storck Ann. Med. pag. 146.

<sup>p</sup> Académie des Sciences, l'An. 1721.

Histoire, pag. 38.



ly by tapping: but in the fourth, fifth, and sixth years, she was tapped thirty times in the space of seven months, but not more than sixteen pints flowed out each time. She began to languish and waste away, to breathe with difficulty, and to be subject to faintings. At last she grew tired of life and of the operation, and died quietly, after having been tapped sixty-six times, and having had one thousand nine hundred and twenty pints of water drawn from her. Here life therefore was prolonged several years, and the disorder so much relieved, that after the water was drawn out, she enjoyed company with cheerfulness, and took pleasure in exercise, and even in dancing; and she directed in her will, that for a memorial of the case, the number of operations, and the quantity of water discharged, should be inscribed on her monument: as also that she bore the disease without repining, and submitted to the operation without fear<sup>a</sup>.

From these instances we see how useful tapping is, how often it has restored health, has almost always given great relief, and has at least prolonged, if not saved, the patient's life, if attempted with proper cautions; of which more presently.

It is indeed true, that tapping is most adviseable when the viscera are still sound, and not impaired by some other disease, and the water has not stagnated so long as to become putrid. But it does not seem that we ought absolutely to reject this remedy, even though there be a suspicion of such disorders existing. *Sydenham*<sup>r</sup>, who for this disease made use of strong emetics and cathartics, candidly acknowledges that the dropsy cannot always be cured. He well knew, that in an inveterate ascites the viscera became corrupted, and therefore readily saw, that in this situation violent remedies were not safe, the disease being beyond the reach of art. However, he adds

<sup>a</sup> Mead Monit. & Præcept. pag. 148—151.

<sup>r</sup> De Hy-

drope, pag. 634.

adds what follows, and is well worthy note: *nihilominus medici est, cum certo scire nequeat, quantum adhuc noxæ visceribus illatum fuerit, curationem omni ope moliri, remediis tam evacuantibus quam corroborantibus, Et neque animo ipse cadere, neque ægro ut cadat autor esse debet. Cui rei ob hanc potissimum causam danda est opera, quoniam in permultis affectibus morbi fomite jam penitus exanslato, natura quæ noctes atque dies roboris nostri invigilat consulitque sponte suâ mirum in modum machinatur, quo ægrum a pernicioso morti reliquiis muniat ætueatur. Quam ob rem omnis ascites quantumlibet inveteratus, Et quantumlibet funestum cladem visceribus intulerit, haud alio modo tractari potest, quam si nunc primum occæperit: “ nevertheless it is the physician’s “ part, as he cannot certainly know what degree of “ injury the viscera have received, to attempt the “ cure by every possible means, both by evacuating “ and corroborating remedies; and neither himself “ to despond, nor suffer the patient to despair; “ which deserves attention for this reason especially, “ because in many complaints, the morbid fumes of “ the disorder having quite exhausted its force, nature, watchful night and day for our assistance, of “ her own accord contrives wonderful ways to save “ the patient from the pernicious relicks of the disease: for which reason every ascites, how inveterate soever, and how great injury soever it may “ have done to the viscera, is to be treated no other- “ wise than if it were just in its beginning.”*

Let all prudent physicians judge now, whether it would not be safer to try tapping, when we fear that the waters should putrify, or that the viscera are in a very bad state, than to agitate the body violently by strong emetics and cathartics. The well attested instances enumerated above, easily determine our choice. A woman who had been in a languishing and diseased state for six whole years, began to swell with an ascites, so as to need being tapped. This operation was afterwards repeated twelve times in fourteen months, and seventy hundred and sixteen pints of



water were drawn out in all. At the eighth puncture the water came out foetid. The four following times, less stench was perceived: however the silver pipe was drawn out, stained with a bluish colour; and the three last times there was observed, after the letting out of the water, that a round body slid down from the *epigastrium* to the *os pubis*. After her death, the body being opened, there was found a tumour suspended by a narrow stalk from the navel, and adhering to the peritonæum in several places, and it weighed eight pounds. In this case therefore, after the waters were become foetid, this woman found relief four times from tapping, although there was such a large tumour in the belly<sup>s</sup>.

But tapping was also thrice performed on a woman who was pregnant, but knew it not, and who had at the same time a bearing down of the womb; and that so successfully, that the strength and plumpness of the body increased after every tapping; and six months after the first operation she bore a healthy child, and afterwards was quite restored to health herself: and in this woman the dropsy increased so fast, that there was a necessity for drawing out the water three times in nineteen days, the third and fourth months of her pregnancy. Thus tapping preserved both the mother and the child.

I might collect many more instances, which evince the usefulness of this operation; but these are abundantly sufficient to shew how much may be hoped from it.

It follows, that we see what rules are to be observed for performing this operation without danger, and even repeating it, if the obstinate nature of the disease shall require it.

<sup>s</sup> Medical essays, Tom. V. Part. 2. N° 68. pag. 640.

## S E C T. MCCXL.

**I**N performing this operation, the puncture is to be made about three inches below the navel, and at the same distance from the linea alba (as the measure would be in a healthy body) on the contrary side to that from whence the dropsy took rise, by the means of a suitable instrument: and the pipe of the trocart being put in, and drawn out again, a small quantity of water must be let out twice every day: a fortnight at least being employed in the evacuation, and in the mean while using the means prescribed (§. 1233. to 1238.) or by the modern method, in which the abdomen is braced up with linen swathes, drawn tighter and tighter in proportion as more water is discharged, lest the lax and pendulous viscera should fluctuate in the belly, now emptied of the water.

From what *Celsus* <sup>t</sup> has written concerning the paracentesis, it appears, that they sometimes pierced the navel itself. But some operators made the opening four fingers breadth below the navel, on the left side. We have seen already, that the navel sometimes bursts, and lets out the waters: hence, perhaps, the puncture might be attempted here, if the navel bunching out indicated this way of discharge. However there is good reason for chusing a more dependent part, that the evacuation of the waters may be the easier. But as the abdomen is sometimes prodigiously swelled in an ascites, the distance of the puncture from the navel should be greater, in pro-

<sup>t</sup> Lib. VII. Cap. xv. pag. 481.



portion as the swelling is more considerable. The best way of fixing the place of puncture, is to measure the distance between the navel and the edge of the *os ilii*, and push in the trocar just in the midway between both. Surgeons usually mark the place indicated for the puncture with ink, and if the abdomen be enormously swelled, they chuse a place still lower. By this means sufficient care is taken, that neither the *linea alba*, nor the tendinous sheath which wraps up the *musculi recti* of the abdomen can be hurt, (as from the wounding of tendinous expansions, pain, and other greivous symptoms are used to follow). This operation is performed with equal safety on one side of the abdomen, as on the other; and there is no choice, but from the desire of making the puncture on the opposite side to that in which the source of the dropsy is lodged; which expression is to be understood thus: very often there is in this disease a schirrus of the liver or spleen, which not undeservedly is accounted the cause of the dropsy, as has been said before.

Now as schirrous viscera grow to a very great bulk, therefore if, for instance, we suspect a schirrus of the spleen, the puncture is made on the right side, lest (if it were made on the left side, in which lies the spleen) after some part of the water is drawn off, the schirrus should press on the orifice of the pipe, and impede the discharge of the rest. *Celsus* also cautions us to take great care, *ne qua vena incidatur*; "that no vein be cut:" for we often see, that the cutaneous veins in the abdomen swelled in ascites, are very large and varicose.

It is true indeed, that no very dangerous hæmorrhage is to be feared from cutting a vein, but the by-standers are alarmed; and, if any thing amiss should follow, would lay the blame on the surgeon, as not having been sufficiently careful.

\* Lib. VII. Cap. xv. pag. 451.

*Garengat* <sup>w</sup> has remarked also, that little ulcers sometimes follow on these veins being hurt. Now this may easily be avoided, as the puncture may be safely made at some distance from the place determined by the measure.

Although the patient might undergo the operation conveniently enough sitting in a chair, yet most practitioners chuse it should be performed in bed, the patient lying on one side in such a manner, that the swelling of the abdomen comes out beyond the edge of the bed. Thus the fatiguing the patient is avoided, and the bed is not liable to be soiled by the discharge of the water.

Now this question comes to be considered, whether all the water from the abdomen should be let out at once, or at intervals of time? Physicians and surgeons have been of different opinions on this head, and formerly indeed all maintained, that the water could not be let out all at once without great danger. The unanimous sentiment of the ancients confirmed this opinion, as the unhappy events which followed the evacuating all the water at once, in improper circumstances, seemed to demonstrate the truth of it. Many persons believed that, together with the water, there issued forth some subtle spirituous effluvia absolutely necessary to life. This seems to have been the opinion of *Celsus*, when he says <sup>x</sup>, *illud jure aliqui mirabitur, quomodo quædam simul affligunt nostra corpora, & parte aliquâ tueantur, nam sive qua intercutem quem implevit, sive in magno abscessu, multum purcoit, simul id omne effudisse æqua morbiferum est, ac si qui sani corporis vulnere factus ex sanguis sit*; “some wit  
 “ good reason will wonder, how any thing can  
 “ once both be hurtful to our bodies, and in part  
 “ conduce to their preservation: for whether  
 “ dropsy has filled one with water, or a great quan  
 “ ti

<sup>w</sup> Operations de Chirurgie, Tom. I. pag. 249.  
 Cap. viii. pag. 72, 73.

<sup>x</sup> Lib. I.



“ tity of pus has been collected in a large abscess ;  
 “ for the whole to be discharged at once is equally  
 “ mortal, as for a sound person to lose all his blood  
 “ by a wound.” Certainly *Hippocrates*<sup>y</sup> directs an  
 actual cautery to be applied to the belly, and the  
 water to be let out by little and little : nay, else-  
 where<sup>z</sup> he prognosticates certain death from the con-  
 trary practice ; *qui empyici aut hydropici uruntur, pure*  
*vel aqua consertim effluente, omnino pereunt* ; “ they  
 “ who, having an empyema or being dropical, are  
 “ cauterized, if the pus or water be all discharged  
 “ at once, they certainly perish ;” (as we mentioned  
 before, §. 1219.) *Galen*<sup>a</sup>, in his commentary on  
 this passage, endeavours to give a reason for this  
 prognostic ; because, says he, some arterious vessels  
 are unstopped, to which the pus before served as a  
 stopper : now the pus being discharged all at once,  
 much spirit or air rushes out with it, to the injury of  
 the patients. It is well known, that the ancients  
 thought air, rather than blood, was contained in the  
 arteries ; and in dropical persons, they thought that  
 sudden evacuation of the water was hurtful, not only  
 on this account, but also because the schirrus (of the  
 liver suppose, which is one cause of the dropsy) be-  
 ing no longer sustained by the water, would fall and  
 draw downwards with it both the diaphragm and the  
 contents of the thorax. And because they chose to  
 draw off the waters by degrees, for this reason they  
 preferred the actual cautery to cutting ; as the place  
 that is burnt will not close without suppurating first,  
 but the lips of a wound made by cutting soon unite.  
*Celsus*<sup>b</sup> confirms this ; *quidam cute primum adusta, de-*  
*inde interiore abdomine incisa, quia quod per ignem di-*  
*visa est, minus celeriter coit* ; “ others first cauterize  
 “ the skin, and then make an incision through the  
 “ interior teguments, because what is divided by the

<sup>y</sup> De intern. affect. Cap. xxvi. Charter. Tom. VII. pag. 657.  
 Aphor. 27. sect. vi. Charter. Tom. IX. pag. 263. <sup>a</sup> Ibi-  
 em. <sup>b</sup> Lib. VII. Cap. xv. pag. 451.

“ actual cautery unites less quickly.” *Celsus*<sup>c</sup> made the wound with an iron instrument, into which he afterwards introduced a leaden or brazen pipe through which the water was to be evacuated; and directs, that when the greater part of it was discharged, the pipe should be stopt with a bit of linen and left in the wound, if it was not cauterized; then on the following days a hernia (about three quarters of a pint) is to be let out every day, till no water appears to remain. But he observes, that some even take out the pipe, although the skin has not been cauterized, and tie over the wound a sponge squeezed out of cold water or vinegar, and the day following introduce the pipe again, (which the recent wound, by being a little stretched open, will admit) that so, if any water remain, it may be evacuated. These latter, therefore, were bolder practitioners, as they drew out the whole quantity at two discharges.

It is certain, that when the water is let out all at once, the viscera, which were before compressed, now fluctuate at large in the emptied abdomen; their vessels, before compressed also, now are more easily dilated by the fluids propelled from the heart: whence sometimes almost all the blood passes into these unresisting places, and none, or but a small quantity tends to the superior parts; hence all the vessels of the brain suddenly collapse, and there is room to apprehend a fatal syncope. A like misfortune sometimes happens to child-bearing women, who to appearance, by happy and quick efforts, are delivered of the waters, foetus and secundines, presently after one another; whence the blood suddenly and impetuously rushes into the dilated vessels of the womb and also passes in greater quantities in the vessels of the other abdominal viscera, now no longer compressed by the bulk of the distended womb: but the abdomen, immediately after delivery, being gently braced up with a broad linen cloth, this evil may be

<sup>c</sup> Ibidem.



prevented, as we shall see hereafter, in the chapter of the diseases of child-bed women. It is true indeed, that in delivery, the placenta being separated from the womb, the blood flows in streams from the gaping necks of the uterine vessels, which augments the danger. But in the case we are now considering, there is also a fear lest the viscera, which have been so long soaked and softened in the collected water, should be so weakened, as to burst by the impetus of the blood flowing more freely into them, or that the orifices of their vessels would be so much dilated, as to let out the blood by an anastomosis. This seems to be the reason why the waters issue limpid at the first tapping, and if it be repeated, flow out tinged with blood<sup>d</sup>.

Monfieur *Du Verney* junior<sup>e</sup>, to obviate this danger, advises the using a narrow pipe, that the waters may flow forth less impetuously; and that the discharge of the waters be every now and then stopt, that time may be given for the distended parts to contract themselves by their natural elasticity. He directs likewise, that the abdomen should be pressed with the hand, or braced up with rollers, as is customary to do with women immediately after delivery: and that at the same time, if the patients grow faint, they should be revived with broth, or with generous wine, than which there is scarce any better cordial. But if the pipe be very narrow, and the waters should be viscid, the discharge will be difficult; and a narrow pipe may be easily stopped up by little membranes coming out with the water: wherefore provided the abdomen be properly compressed while the waters flow out, we may safely use a larger pipe. This is well confirmed by Doctor *Mead*<sup>f</sup>, who being desirous to know what effect the compression of the abdomen, after the puncture, had towards prevent-

<sup>d</sup> Monro on the dropfy, pag. 73.  
l'An. 1703. mem. pag. 184.  
pag. 146.

<sup>e</sup> Academie des Sciences,  
<sup>f</sup> Monit. & Præcept. med.

ing the danger of sudden death ; as soon as the waters began to issue from the wound made by the trocart, putting his hands on each side above the navel, carefully prest the abdomen downwards, directing the surgeon at the same time, to press the lower part of the belly in like manner : *id autem animadvertit si vel per temporis momentum manus amoveret ægrum acutum animo deficere* ; “ he observed, that if he removed his hands but for a moment, the patient “ was immediately on the brink of swooning.” The waters being all drawn out, the abdomen was wrapped round tight with flannel rollers, a flannel cloth dipt in spirits of wine having been first put upon it. The patient recovered, and never had a relapse.

But as this pressure with the hand requires more than one person, and a roller is to be wrapt round the abdomen after the waters are drawn out, which cannot be done without removing the hands ; so that there would be danger of a syncope, on the interval between the taking off the hands and the binding.

Doctor *Alexander Monro* contrived a belt, which he has described<sup>g</sup>, which is put round the abdomen before the puncture is made, and drawn close by buckles as the water flows out, in such a manner as that there constantly remains an equable pressure ; and when the water is all drawn out, the belt may remain, and there will be no need of other rollers.

When this belt became known, I have used it always with good success, and have known others do the same ; so that not only fifty-six pints of water (as this excellent author rejoiced he had been able to do) were let out at once, but even an hundred pints, without any fainting. This gentleman has also more precisely determined the place of puncture<sup>h</sup>, namely, just in the midway between the navel and the crest of the *os ilii* ; but as this crest has a great extent, hence even this direction does not exactly enough

<sup>g</sup> Medical essays and observations, Tom. I. N<sup>o</sup> 18. pag. 218.  
<sup>h</sup> Ibidem, N<sup>o</sup> 18. pag. 216.



answer the precise point; wherefore he informs us, that the safest part for making the puncture, is half-way between the anterior process of the *crista ossis ilii*, from whence arises the rectus muscle of the leg<sup>i</sup>.

Tapping is frequently performed every year in this manner, in the hospitals at *Vienna*, with good success; and we safely follow the advice of *Cælius Aurelianus*, *per cathetera, liquorem si res patiuntur, semel atque eodem tempore omnem auferendum*; “<sup>k</sup> the humour is to be discharged (if the circumstances will allow of it) by the catheter, all at one time;” for he used the female catheter, after he had made a passage into the abdomen with the lancet: he also warns us to avoid, *venarum divisuras*, “cutting cross the veins.” He used pressure of the hands, but as it seems, only to assist the discharge of the water, and does not seem to have thought at all of rollers; for he only kept the dressing fast on the place of puncture, *leni fasciola*, “with a slight bandage;” if it were necessary to defer the entire evacuation of the water; *quo perturbatio corporis resolvatur: ac deinde resumo ægotante eodem sive residuum detrahimus humorem: sin minus alia die a manibus comprimentes subjacentes partes*; “for the commotion in the body to subside: and then resuming the operation on the same day, we draw off the residue of the humour; or else the next day, pressing the subjacent parts with the hands.”

All the water may therefore safely be let out at one time, if the abdomen be braced with such a belt as we have mentioned, drawn closer and closer, in proportion to the quantity of water discharged. Thus great trouble is saved to the patient, and a better effect may be hoped: for if the discharge be made at different times, either the pipe must remain in the belly, from whence frequently an inflammation arises

<sup>i</sup> Tabul. Eustach. 43. N<sup>o</sup> 30.  
pag. 483.

<sup>k</sup> Lib. III. Cap. VIII.

in the circumjacent parts, the contracted and corrugated integuments of the abdomen being prest and rubbed against the hard pipe; or if the pipe be taken out, so small a wound soon closes, or at least is so much contracted, that it cannot be introduced again without force, from whence troublesome complaints are used to ensue. Wherefore *Cælius Aurelianus*<sup>1</sup>, who made the wound with a lancet, and afterwards introduced a pipe, and therefore made a larger opening, directs, that if all the water cannot be taken away all at once, *alio in loco divisuram facientes; vel si rursum oportuerit tertio. Et enim prima divisura servata. Distans, aut coherens soluta, tumores vel consensus ingerit vehementes*; “ we should perform, by making the opening in another place at each repetition: for the first wound, if kept open, will occasion swellings; or if it be opened again after it has closed, will cause great pain to the patient.”

But the chief danger seems to be, that the putrefaction of the water may be accelerated by the air having had access to it: for although the waters, before they have had any communication with the external air, may not have yet grown putrid; yet they may be so near it, as to putrify presently on the admission of air. A woman had been dropfical fifteen years. A gangrene arose under the navel, which afterwards separated from the sound parts, and left an opening, through which the water, contained in the cavity, rushed out with great impetuosity, without any remarkable stench; yet this water, within a few hours after it was discharged, grew so stinking, that no one could bear the smell<sup>m</sup>. This water therefore could lodge in the body without being much corrupted, for so many years, and on the free access of the air, was all turned putrid in a few hours. Sometimes also, a little before death, the water acquires a most terrible putridity, so great

<sup>1</sup> Ibidem.  
pag. 18.

<sup>m</sup> Ruysch. observ. anatom. chirurg. N° 18.



even that a surgeon performing the paracentesis on a body, a few hours after the patient's decease, from the putrid effluvia of the green coloured serum, which issued from the wound, was seized with a pestilential fever, from whence with great difficulty he recovered <sup>n</sup>.

This sudden corruption of the waters stagnating in the abdomen, when the air gained admittance, seemed to have been the chief reason why great physicians despised the operation of the paracentesis, as almost all the patients died. The following case shews this<sup>o</sup>. A young man had an ascites, which increased slowly for six months; neither the lower limbs nor any other part of the body, except the abdomen, were swelled; he had no oppression on his breast; he could lie down without inconvenience; his pulse was good, nor was any thing else in his body amiss; and no other disease had preceded the drop-sy. The skilful surgeon justly concluded tapping might be attempted with good hope of success, in such a case, if ever. Nor did the physician deny his consent, but said, with a smile, that the patient would not recover after the tapping; for that he had seen almost all persons die, on whom this operation was performed. As the navel was very prominent, it was pierced with the needle, and six pints of water were taken away, (for it was not this surgeon's custom to let out all the water at once): the aperture was closed with yellow wax and proper dressings, in such a manner, that not a drop of water could escape from it. On the evening of the same day, the same quantity was drawn out by the same aperture; and this was done daily twice a day. All things went on happily till the twelfth day: the swelling of the abdomen subsided greatly, the patient seemed vigorous, his appetite was good, he had no fever, nor any other bad symptom; but scarce was the twelfth

<sup>n</sup> Pringle on the diseases of the army.  
zioni di Ant. Benivoli, pag. 126.

<sup>i</sup> Disserta-

day ended, when a fever ensued, attended with a nausea; soon after convulsions appeared: the water, which had hitherto been limpid, came out dirty and foetid, staining the silver needle first with a violet, and afterwards with a black colour. He died the twenty-fourth day after the first tapping. In the body there was found a small obstruction on the concave side of the liver; but the whole peritonæum was mortified, and a vast quantity of putrid fluid, of the most foetid smell, deluged the whole cavity of the abdomen.

*Benevoli* concluded from hence, that the free admission of the air, after so many punctures, might be accounted the cause of this putrefaction; and that therefore, the water should be drawn off all at once from the cavity of the abdomen: in which opinion he was confirmed, by the case of a woman who had an ascites, whose navel swelling, ulcerating, and bursting, let out all the water suddenly, in so great a quantity, that forty pints were collected in several vessels; besides no small quantity spilt in the bed and in the chamber, before vessels were ready to receive it.

This woman, in three weeks time, the rupture being closed, returned home from the hospital. The ascites returned again four or five years after, and went off by a discharge of urine.

It may perhaps be said, in opposition to this, that there are other instances which shew, that the water drawn off by tapping, does not always corrupt so soon, although exposed to the air. It was observed before, §. 1219. that a fluid drawn from the cavity of the breast, shewed no signs of putrefaction five days after death; nay, that being put in a digester, it exhaled an acrid odour, which, however, after many days, turned to a very nauseous putrid smell.

*De Haen* <sup>P</sup>, after he had quite evacuated the water from the abdomen of a woman, who had an ascites,

<sup>P</sup> Rat. Medendi, Part. iv. pag. 73.



kept twenty-seven pints which he had drawn out, in glass vessels in the open air for a fortnight, without there being any sign of putrefaction; at the bottom subsided a thick jelly in some of the vessels mixed with blood, and with pus in others: the thinner part which swam on the top being put over the fire, presently coagulated; whence it was with reason concluded, that the greater part of the collected fluid was serum. It is however to be noted that the disease was young, having scarce lasted five months before the patient was tapped; so that there was the less tendency to putrefaction. But the fluid let out began pretty soon to degenerate; for in eight hours time it began to form oblong white flakes from the surface downward, and the next day pus appeared at the bottom. It is true indeed, that the history of the disease shews, that there was good ground to suspect that the womb was suppurated: but it seems proper to remark, that Dr. *Pringle*<sup>a</sup> has observed that the pure serum of blood, when it was disposed to putrefy, became thick and muddy, let fall a white purulent sediment, and turned of a light greenish colour: now the fluid drawn from this woman was greenish and turbid, and the next day (although not immediately) shewed pus at the bottom. Whence it seems probable enough, that if part of the water drawn out had remained in the abdomen, the air having gained access, would, together with the heat of the body, soon have brought on putrefaction: for when the water is drawn off at separate times, a considerable time often passes before the compleat evacuation can be made, as appears from the instance related by *Benevoli*.

At the same time it appears, that purulent matter may be formed in the serum of the blood when it degenerates, although no inflammation has preceded; which remark is of great moment, to the understanding those sudden metastases of morbid matter, sometimes

<sup>a</sup> Diseases of the army, pag. 420.

times observed in diseases, when on a sudden a tumour filled with pus arises in some part of the body; although no signs shew that there has been any abscess elsewhere, whose pus has been re-absorbed and deposited on these parts. It appears also, that the ancient physicians had good reason to call the change of the humours into pus, putridity; not however understanding by this absolute putrefaction, but such a degree in which there still remained something of concoction. See what was said on this head, §. 387. where we treated of an inflammation too violent for discussion, and tending to an abscess.

The instrument used for tapping is known to all, and is to be found described, with a figure annexed, in *Heister*, *Garengeat*, and others; namely, a triangular, pointed needle, sheathed in a silver pipe, in such a manner that the point sticks out, and so constructed, that after the puncture is made the needle may readily be drawn back, the pipe remaining in the cavity of the belly. It is common now to prefer a large pipe to one more slender; as when the abdomen is duly supported and braced by the belt above-mentioned, there is no danger from the speedy effuse of the waters; and if they should be viscid, they will more easily find a passage through a wide orifice.

But it has sometimes been observed, that the cavity of the abdomen does not contain water easily flowing out, but there is found a tremulous kind of jelly, (as in the instance mentioned, §. 1226,) which will not come out even through a wide pipe, even when the abdomen was squeezed. It happened, in the case to which I now refer, that the first time a greenish water, like that in which asparagus has been boiled, and fluid enough came out, and soon after nothing at all; although the wound was dilated, the patient put into a warm bath, and warm liquors injected into the abdomen, the patient soon died,  
and



and the abdomen was found full of such a jelly<sup>r</sup>. And that woman who I mentioned died in three days time, but I could not obtain permission to open the body.

In such a case nothing seems to be left, but to abandon the patient to his fate; or, by making a large opening, to procure a passage for the gelatinous matter contained in the cavity of the abdomen. We read<sup>s</sup> that this has been done: an incision five fingers broad being made in the abdomen, a jelly came out, but with difficulty, as it took two hours and a half for thirty-five pints to come out; the abdomen, however, was not quite evacuated, for on taking off the dressings fifteen pints more like a jelly issued forth, and more afterwards. The fourth day a diarrhoea came on: the fifth serous humour flowed out; the signs of a mortification and putrefaction ensued; and at last the patient died, on the thirteenth day after the operation. On opening the body, the right ovary, greatly dilated, was found to have been the seat of all this vast mass, and that the incision had penetrated into the cavity of this tumour, by an opening of about four fingers breadth. Two other holes were found made by the putrefaction, through which this jelly had passed into the cavity of the abdomen. Certainly it does not seem strange, as there was need of so large a wound, that the air acceding freely should have caused putrefaction.

Another wonderful instance happened at *Paris*<sup>t</sup>. A robust, well-set man, of forty-eight, was tapped for an ascites: nothing issued from the wound at first; but when it was dilated, there came out a gelatinous matter of a grey and clay colour, thicker than the white of an egg, with a great quantity of hyda-

<sup>r</sup> Targioni Tozzetti osservazioni Med. pag. 34, 35.      <sup>s</sup> Mémoires de l'Académie Royale de Chirurgie, Tom. II. pag. 452.  
<sup>t</sup> Philosophical Transactions, Volume XXXII. N<sup>o</sup> 370. §. 4. pag. 17.

hydatids equal to six measures (a measure usually contains four pints); his strength kept up very well. The next day there issued again from the dilated wound, a great many hydatids of a larger size, equal to pigeons eggs; together with a bit of some white mass, looking like a portion of the omentum, to which it adhered by fibrous stems. Several hydatids, and at the same time six measures of a like jelly came out; but the number of hydatids, small and great, is related to have been seven or eight thousand.

On the sixteenth day after the operation, the patient continued in a very good way: the belly was soft and smooth; the wound looked very fair; the urine, pulse, and respiration, were good; there was no fever, the sleep was quiet. The matter evacuated was for thirteen days copious, but without smell; afterwards serous and in small quantity, but having a strong smell, and staining the probe with a black colour. But it was thought that this was rather to be ascribed to heterogeneous bodies corrupted, than to a mortification of the bowels, as there was no fever; and also because an antiseptic decoction being injected into the abdomen, there came out a skin of a broken hydatid, which seemed to have been at least as big as a hen's egg when it was whole.

What was the event of the disease is not said, but it is likely it was fatal at last, as putrefaction, which is so dangerous, was begun already; and the account subjoins, *appetitus & vires nunc sunt quæ nobis faciunt*; "appetite and strength now begin to fail." Certain, when the abdominal viscera are soaked in putrid matter, and a robust man's strength begins to fail, little hope seems to remain.

Ought not therefore the wound to have been dilated in such a case? Certainly in the case under my care: I was not allowed to this, yet the patient died in three days. In both the cases just recited, when the wound was dilated the patients found themselves relieved,



relieved, and survived a longer time; and it is a general axiom, that desperate diseases warrant desperate remedies. The antiseptic virtue of the *Peruvian* bark, now so well known, would give us some room to hope a good issue, from injecting the decoction of it into the abdomen, and at the same time swallowing the same remedy.

Now the injection of detergent antiseptic liquids into the cavity, after the water is drawn out, has frequently been tried; for it has been observed, that the waters often deposited a feculent, muddy sediment, and that sometimes a gelatinous matter settles at the bottom; whence it is thought, not without reason, that in an ascites of long duration, something like this may happen in the cavity itself where the water lodges. Now these dregs may adhere to the sides of the cavity, and to the contained viscera, and seem likely to putrefy sooner than when air has been admitted; whence it has been thought adviseable to wash off these feculencies.

As after repeated tapplings the liquor comes out thicker and foetid, *Littre*<sup>u</sup> used vulnerary injections in an ascites, which occupied the duplicature of the peritonæum: and injections into the cavity of the abdomen itself have also been tried, and that in large quantities. A skilful surgeon (Mr. *Warrick*) equally ingenious and dextrous<sup>w</sup>, performing this operation on a woman of fifty who had an ascites, drew out thirty-six pints of transparent, greenish lymph, very successfully indeed; but in forty days more, the abdomen was swelled as much as ever. Hence there was a necessity for evacuating the waters anew: and as by various experiments on the water drawn out by the first tapping, he found that this liquid coagulated by mixing red wine, or *Bristol* water, with it, he imagined a relapse might be prevented, if these liquors

VOL. XII.

I i

were

<sup>u</sup> Académie des Sciences l'An. 1707. Memoir. pag. 669. & 679.

<sup>w</sup> Philosophical Transactions, Vol. XLIII. N<sup>o</sup> 472. §. 3. pag. 13, & seq.

were injected into the cavity after the water was drawn out; two physicians of good note consenting to try this method: when he had drawn out about two thirds of the water, he injected an equal quantity of *Bristol* water made blood warm, and of wine. As the abdomen could not be filled very fast, the patient began to faint; but recovered, when the abdomen was swelled again. The patient felt, she thought, as if the injected liquor entered her stomach; but as there was still a considerable quantity of lymph remaining in the abdomen, when he injected the mixture of wine and *Bristol* water, he feared lest the efficacy of the mixture might be weakened; wherefore letting out through the pipe all the liquid contained in the abdomen, he filled the cavity again with a mixture, two parts wine and a third *Bristol* water, that the efficacy might be the greater. The patient then felt pungent pains in her breast, and twinges all over her bowels; she breathed with difficulty, the pulse fluttered, the syncope returned, and she was speechless: so that evacuating the abdomen as soon as possible, he took out the pipe, and braced the abdomen with the usual dressings and rollers; and thus the patient recovered her senses.

The success was compleat, for she had no relapse; but enjoyed perfect health, and remained in this happy situation for a whole year.

The reverend Dr. *Hales* hearing of this, formed a more commodious method of trying this experiment for the future, namely, by making a double puncture; so that while the water issues out by one pipe, the medicated injection may be thrown in by the other <sup>x</sup>.

From all that has been said, it appears how great an improvement in the art it is to let the waters out  
all

<sup>x</sup> Philosophical Transactions, Vol. XLIII. N<sup>o</sup> 472. §. 4. pag. 20.



all at once, supporting and bracing up the abdomen at the same time.

Sometimes some things happen during the operation, which retard the flowing of the water; and unless these obstacles can be removed, totally obstruct the evacuation. We have already spoken of the gelatinous visciduity of the contained liquid; but it sometimes also happens, that after a considerable quantity of water has been drawn off, and the abdomen has been constricted in proportion as the water has been evacuated, the omentum, or the intestines, touch on the orifice of the pipe and stop it up. Where good surgeons take care to have in readiness a flexible, blunt, leaden probe, which they introduce through the pipe, and thus without danger of hurting any part, they remove such obstacles. Such a probe must be of a smaller diameter than the hollow of the pipe, that it may be the more easily introduced, and that the water may pass out between it and the concave surface of the pipe. It sometimes happens, that membranes floating on the water get into the pipe and stop it up. A surprising instance to this purpose is related<sup>y</sup> of a case, wherein after the puncture was made no water came out; and on drawing out the pipe there followed a round body, somewhat flat however, prominent two fingers breadth from the wound: this being carefully drawn out without pain, or hæmorrhage ensuing, the waters rushed out with violence. This body being unfolded resembled a membrane as thin as a cobweb, in which nothing organical appeared; and hence it was thought to be the tegument of the cyst, which contained the water in its cavity. Whence also it was hoped, that the waters would not collect so easily for the future; and it being found necessary to repeat the tapping twice in the space of two months, a less quantity was drawn out each time. The patient survived seventy-three

I i 2

days.

<sup>y</sup> Académie des Sciences l'Ann. 1718. Histoire, pag. 34.

days. Mr. *Morand*<sup>z</sup> found, on opening the body, the remainder of the membrane of the cyst adhering to the external membrane of the schirrous liver, and pendulous from it.

But such bags have not always so thin a membrane, but more frequently are of a firmer structure, and sometimes have been found schirrous, as appears from what has been said before. Sometimes they adhere to the intestines; and if they are not grown quite hard, but still have a contractile power after the waters are discharged, they may be capable of twitching, and irritating the intestines: and the same thing may happen when the intestines, adhering to the bag, and no longer confined by the water which filled the cavity, act more freely; from which causes may arise those pains and spasms, which sometimes follow the operation<sup>a</sup>.

After the waters have been as compleatly evacuated as possible, there might seem to be room for hope, that the little which remained might be absorbed, especially as by means of the belt the abdomen resists distension, and the physicians, by proper diet and corroborating remedies, (of which hereafter, §. 1250.) endeavour to prevent the return of the dropsy. And this re-absorption seemed so much more to be hoped, as medical observations shew, that even thicker fluids are capable of being re-absorbed, and afterwards evacuated by urine. A virgin of twenty years had had an ascites two years, and been tapt thrice: three or four pints of slimy bluish matter came out each time. After the third tapping, she began to use a ptisan of nettles, orrice, and round-leaved sorrel. The next day a like slimy matter was found in the urine, and in so great a quantity, as to compose at least half the urine. She recovered, was married, and bore children<sup>b</sup>.

From

<sup>z</sup> Ibidem, l'An. 1719.    <sup>a</sup> De Haen ratio medendi, Tom. IV. pag. 108.    <sup>b</sup> Acad. des Sciences, l'An. 1703. Mem. pag. 175.



From what has been said we see, that an ascites frequently returns, and is rarely cured by a single tapping. This physicians could wish to be otherwise; but they are not surprised at it, well knowing, that after the water is evacuated, the cause of the dropsy is not always removed, which remaining, a relapse is to be apprehended. They easily understand that these vessels, which being dilated or burst, let out their fluid, now freed from the pressure of the water, will pour out a like humour, and indeed in a greater quantity: whence they did not think it strange, that the abdomen, which had swelled slowly for several months, or even years, before the operation, filled very soon again after the load of water was discharged by tapping. But this has seemed very strange indeed, that although a very small quantity of liquor was drank, and the urine equalled or even surpassed that quantity; yet the abdomen in a few weeks was equally, and sometimes more swelled than before.

A woman, in an ascites, had forty-six pints of water taken from her by tapping, and was greatly relieved. *Celsus*<sup>c</sup> has told us, *neque alienum est, metiri & portionem ejus & urinam; nam si plus humoris excernitur quum assumitur ita demum secundæ valetudinis spes est*; “and it “is not improper to measure the patient’s drink and “his urine; for if more moisture is discharged, “than is taken, in such a case there is hope of recovery.” I followed this advice, and saw with pleasure, that the urine daily exceeded in quantity the liquor drank; yet the patient being weighed every day, was found to grow heavier. In three weeks a new tapping was necessary, by which fifty-three pints were taken away: a month after, forty pints more were let out. During all this time she either wholly abstained from drink, or when she could bear extreme thirst no longer, drank ten ounces at most of beer, and that very strong. And

as this woman was extremely desirous to recover, and I had always found her very obedient to my directions in other diseases, I had no suspicion that she deceived me : add to this, that she was poor, and had not meat or drink but such as I supplied. Now although by a careful daily examination, the urine was found to exceed the quantity of drink, and of the liquid part of her food, yet the size of the abdomen daily increased from the collected water.

Do therefore the bodies of dropfical persons attract water from the air ? *Hippocrates*<sup>d</sup> seems to be of this sentiment ; for he thought, that dropfies took rise from flatulencies ; *quod si flatus per carnes percurrentes, corporis meatus rarefecerint, eos humiditas consequitur, cui viam aër antea struxit* ; “ but if flatulencies getting through the flesh, have rarefied the pores of the body, moisture follows them, to which air has prepared the way.” And to explain why the dropsy returned so soon, he says, *est & hoc aliud ejus rei indicium. Nam ventre penitus evacuato, non transeunt tres dies & iterum impletur : quidnam igitur aliud quam spiritus impleat ? Quidne aliud tam cito implere posset ? Neque enim tanta potus copia corpus ingressa est, neque carnes quæ colliquescent in causa esse possunt, quum ossa supersint & nerva & fibræ, a quarum nulla quidem tantum aquæ augmentum fieri potest* ; “ and this is another sign of this thing ; for after the belly has been quite emptied, three days do not pass before it is filled again. What else therefore but air can fill it ? Or what else can fill it so soon ? For neither has such a quantity of liquor been drank, nor can the wasting away of the flesh be the cause, as the bone and sinews still remain, and the fibres, from none of which such an increase of the swelling can proceed.” It is certain, that in the warm summer air, which all think the driest, there lodges an incredible quantity of water ; for fixed alkaline salts, produced by means of fire quite dry, grow moist

<sup>d</sup> De Flatibus, Cap. vi. Charter. Tom. VI. pag. 218.



moist presently in this air, and increase in weight as soon as they are cold : nor is it a small quantity of water which these salts attract to themselves from the air. *Digby* observed, that a pound of salt of tartar drew to itself from the neighbouring air six pints of water, when it was dissolved for *per deliquium*, as the chymists speak<sup>e</sup>. If now we reflect on the lightness of the ambient air, we shall find, that this dry alkaline salt must have attracted the water from the air from a great distance, or the air being in perpetual motion, having various parts successively applied to the alkaline salt, must have deposited its contained water therein. Nor is this a property of alkaline salts alone ; but sea-salt also, and sal ammoniac liquify in the air : nay, that very strong acid oil of vitriol, if made by chemists as concentrated as possible, it concretes into a solid form like ice, in clean glass vessels in which it is preserved, if they be close stopp'd up. If such a vessel be put in a scale, and an exactly equal weight in the other scale, let the stopper be taken out that the air may have free access, and scarce a minute passes before the scale, in which is the vessel, descending, shews an increase of weight there ; and therefore the solid mass of concreted oil of vitriol begins to liquify. There are many other bodies which draw to themselves the water lodged in the air ; but this is not the place to enumerate them.

What we have said already suffices to shew, that the air contains a considerable quantity of water, and that some bodies draw it thence, and unite it to themselves.

If besides we consider, that in an ascites, the tumid abdomen increases in bulk, while the rest of the body wastes, and becomes exhausted of its juices ; it will not appear unreasonable to believe, that drop-sical bodies attract to themselves the water from the

I i 4

air,

<sup>e</sup> Dionis. dissert. sur le tœnia ubi ille tractatus *Digby* habetur, pag. 166, 167.

air, especially as no other cause can be assigned, why persons in an ascites, after they have been freed from all the water by tapping, are so soon filled again, although they drink very little, and eat the driest food; and although the quantity of urine even surpasses that of the liquor drank. A wonderful instance is related by *Peter Servius*, physician to pope *Urban* the VIIIth, of a nun, who, by fasting, vigils, and meditation, had so exhausted her body, that a violent heat came on, together with an extreme universal driness. This nun, for some weeks, discharged every four and twenty hours upwards of two hundred pints of water from the bladder.

*Digby*<sup>f</sup> confesses, that he could scarce have believed this account, if so great a physician had not related it; and if he had not heard it confirmed by the patient herself, and by several physicians of *Rome*.

Often have physicians wondered to see the prodigious quantity of limpid urine excreted in hysterical paroxysms, insomuch that there might seem room to apprehend a dangerous inspissation of the blood, deprived of its diluting vehicle; yet such patients, when the fit is over, enjoy tolerable health. Does something similar happen in these diseases?

It remains to see the different prognostics formed by physicians, of the event after tapping, according to the different quality of the waters drawn out.

It was said, §. 1215. that a watery serum was collected in the larger and smaller cavities of the body in a dropsy; and it was then proved, that not always pure water is collected there, but there is almost always mixed with it some of the serum of the blood, diluted however with plenty of lymph, which does coagulate over the fire like the serum, but evaporates. When, therefore, by tapping, a fluid is drawn off, which has the qualities both of  
lymph

<sup>f</sup> Ibidem, pag. 167, 168,



lymph and serum, this is accounted a good sign, as it shews, that the extravasated fluids were in a healthy state, and not depraved by long stagnation, or a beginning putrefaction; so that there is reason to hope, that the abdominal viscera, washed on all sides by this fluid, have not received much injury. Now the serum in healthy men is yellowish, has some lentor, is brackish, and exhales something of a urinous smell; whence the water of dropfical persons is reckoned good, if it have the like qualities. This is well confirmed by the observations of *Monf. Du Verney junior* §, who found that a happy event was then principally to be hoped, when the water, discharged by tapping, was of a citron colour, and somewhat mucilaginous and brackish, and exhale a urinous smell: and the more the water departed from these qualities, the greater he foresaw would be the danger; hence he condemned foetid water of a deep yellow, or of a red blood colour, as also those which were altogether mucilaginous, especially in women, because he observed, that then there was an encysted dropfy, which is seldom perfectly cured. Nay, he thought those dropfical waters suspicious, which resembled pure water, and after evaporation left little or no sediment; for in this case the patients generally died, the dropfy soon returning. If these waters deterge the fingers like some sharp leys, and wrinkle the skin, and make it more quick of feeling, this is a sign of considerable acrimony in them, and therefore, that there is reason to fear the viscera begin to be corrupted, especially if shreds or torn pieces of the omentum come out together with the waters.

§ Académie des Sciences, l'An. 1703. Memoir. pag. 206, & seq.

## S E C T. MCCXLI.

**I**F the circumstances (§. 1239.) are absent or opposite, tapping hastens death.

Heretofore, §. 1239. those conditions were enumerated, whose presence assures us, that tapping may be performed, not only with safety, but with good hopes of a cure. At the same time it was observed, that they seldom were all present; yet, that tapping might be useful, although some of these conditions should be wanting: but if all symptoms are contrary, as suppose that the patient is decrepit, the viscera corrupted, certain symptoms of putridity appear, it is then better to abstain from tapping, lest the physician should seem to have destroyed him whom he could not save. However, from what has been said hitherto, it appears, that tapping rarely if ever hastens death, if all the water be drawn out at once, the proper cautions being observed; for many true observations confirm, that dropical persons, of whose lives the most skilful physicians have despaired, have not only received signal relief, but have been perfectly cured by this operation; and even when there remained no hope that the cause of this disease could be removed, and therefore the return of the dropsy was certainly foreseen; yet tapping was of great service, by relieving the patient from intolerable uneasiness, and prolonging his life: from all which we may conclude, that tapping is useful, and that according to the rules of our art, we ought to have recourse thereto in doubtful cases.



## S E C T. MCCXLII.

**I**SSUES made with actual or potential caustery, vesicatories, lancets, setons, in a fleshy part, in a depending place, are often very serviceable, especially if the genius of the disease will allow them to be kept open.

If the collected water can by any way be drawn out from the body, this will ever be useful, as both relief is given to the patients by that means, and room is made for medicine to act in removing the cause itself of the dropsy. When the water is collected in the cavity of the abdomen, or of the thorax, it may be let out by tapping, as we have seen. But in an anasarca, when the water is lodged and distributed through the cellular membrane, of course we see that it cannot be let out by tapping: whence physicians have made use of a different method to procure an easy and safe discharge of the water collected under the skin. Nature herself has pointed out this method, and the event has often been fortunate; for it has sometimes happened, as has been mentioned, that the water has issued like a constant dew from the pores, and the dropfical swellings have gradually decreased. Sometimes the water penetrates through the skin, but does not pass through the epidermis, but raises it into blisters; and when these break, a perpetual dropping follows. Dropfical persons often put their legs, which are very cold, near the fire, and as the feeling is blunted in the swelled parts, a slight burn is occasioned, and bladders rise on the skin, which breaking of themselves, or being bruised, let out water constantly. In some places, women set their feet on portable stoves in the winter: if the feet and legs are swelled by a dropsy, such bladders generally rise on them; and I have seen many women relieved, and even

cured by this means. Among many cures made by burning, *Homberg*<sup>b</sup> relates a case of a woman, whose thighs and legs were enormously swelled for many years, and the swelling was attended with pain, which she used to relieve by rubbing the swelled part by the fire, morning and evening, with spirit of wine: by chance the spirit took fire, and slightly burnt the parts, to which she applied some ointment, and in one night the swelling of her thighs and legs subsided entirely, all the water coming away by urine. It is true, indeed, that in this instance no new issue was made, as the water suddenly set in motion, rarefied and re-absorbed by means of this violence, was discharged by urine. However, it is scarce to be doubted, that this same water would have issued from the bladders raised by the burning, unless by being so suddenly re-absorbed it had found another passage: but the cure was compleat, for the swelling never returned.

That an issue therefore may be made for discharging the water in an anasarca, the skin must be pierced so deep, as that the wound may penetrate the cellular membrane; and at the same time the wound must not be so narrow as soon to close, or to be stopped up by the swelling of the cellular membrane. Physicians have tried various methods for this end. *Hippocrates*<sup>i</sup> directed, that in a boy the swelled parts should be opened with a lancet; and orders at the same time that fomentations should be used, and the opening anointed with a warm liniment; for a gangrene easily attacks the flaccid parts after the water is drawn out, as we shall see hereafter. In another place<sup>k</sup> treating of the dropsy he says, *quod si in scroto & femoribus ac tibiis tumor constiterit, per acuto scalpello multis & crebris vulnusculis scarificato. Hæc si feceris cito sanum efficies*; “but if the swelling be in the  
“scrotum,

<sup>b</sup> Académie des Sciences, l'Ann. 1708. Histoire, pag. 56.

<sup>i</sup> De locis in homine, Cap. ix. Charter. Tom. VII. pag. 369.

<sup>k</sup> De intern. affect. Cap. xxiii. Charter. Tom. pag. 655.



“ scrotum, thighs and legs, scarify with a very sharp  
 “ lancet in many places, making the wounds very  
 “ near each other.” *Aetius*<sup>1</sup>, after he has enumerated many remedies for an anasarca, says, *omnibus his prædictis efficacius auxilium in hac hydropis specie chirurgia præstat*; “ but surgery is of more assistance  
 “ in this kind of dropsy than in all the aforesaid remedies;” and this he confirms by the authority of *Archigenes* and *Asclepiades*, who directed, *fissurus fieri circa talum internum, in loco quatuor digitorum spatio super talum eminente, ea profunditate qua quis in venæ sectione utatur*; that the openings should be  
 “ made about the inner ankle, four inches above it;  
 “ and that the incision should be as deep as is usually  
 “ made in bleeding.”

Nor did they fear that the wounds should inflame or close, as water perpetually oozed out, till the whole habit became slender. *Forestus*<sup>m</sup> caused the thighs and legs of a dropical woman to be beat twice a day with twigs of holly; thus the skin being pricked or torn by the thorny leaves of this plant, the swelling in the legs and feet subsided wonderfully.

With much less trouble at this day the skin may be pierced, with the instrument called a scarificator; where several lancets darting out at once, by means of a spring, make little wounds, from whence the blood is afterwards drawn by a cupping-glass. This instrument is so contrived, that the lancets will make punctures of different depths. In the present case they must, after piercing through the skin, penetrate the cellular membrane, which may be done without any danger; and this membrane being distended with water, keeps the skin loose from the subjacent vessels and muscles, and as the skin is pierced in the twinkling of an eye the patients feel no pain, and therefore

<sup>1</sup> Serm. X. Cap. xxx. pag. 246.  
 Tom. II. pag. 394.

<sup>m</sup> Lib. XIX. Observ. 41.

fore are not afraid to undergo the operation again, if it be requisite to perform it on some other part.

A celebrated surgeon <sup>a</sup> was witness to an universal anasarca, in which all the parts of the body, from the crown of the head to the sole of the feet, were swelled. In vain were hydragogues and many other remedies given to this robust young student; and the scrotum was so swelled, that he could not find convenient room for it between his thighs, in whatever posture he put himself. Then he scarified the scrotum, thighs and legs, in several places, from whence a vast quantity of water issued, with so good effect, that the swelling quite subsided in two or three days, and afterwards he quite recovered. A young peasant had an universal anasarca, which together with an ascites being neglected, grew to such a height, that no hopes of a cure seemed to remain. This unhappy man, in want of every thing, was however received into the hospital, that at least he might die quietly: the scrotum was prodigiously swelled, he had a difficulty of breathing, and such a debility of the vital functions, that the pulse could not be perceived in any part of his body, only a tremulous motion was felt about the region of the heart. Warm wine diluted with water being given him, so that he revived a little, so far as that a very languid pulse was felt at his wrist, the lower part of the scrotum was pierced with a lancet in several places, bladders raised on his legs and feet were pierced, and a considerable quantity of water came out. The scrotum and legs were fomented with a warm aromatic decoction, and wine diluted with water was given him for his common drink, together with a diuretic julep; afterwards the legs were pricked in several places, and an incredible quantity of water was let out; the swelling subsided all over the body, the appetite returned, the breathing and pulse grew better; the abdomen however was still swelled, but much less than before. He took

<sup>a</sup> De la Motte Traité complet. de Chirurgie, Tom. II. p. 147.



took every other day mercurial purges, and diuretic remedies in the intervals, with so good an effect, that in three weeks time this man was dismissed from the hospital in good health, of whom all had despaired before; and a year after, the physician who had had the care of him saw him stout and healthy °.

Both these observations shew us, that we ought not hastily to despair, especially if the patients are in the flower of their age: for then when the load of water is removed, the strength soon returns; but this can hardly be expected when the patients are old.

Now as the cellular membrane is distributed all over the body, and its cells communicate with each other, it will not seem strange, that when this membrane is pierced in some lower part of the body, all the fluid which lodged in the cellular membrane should be evacuated: but it is more surprising, that the water in an ascites accompanying an anasarca, should be let out by the same means. *Aetius* <sup>p</sup>, as we observed before, commends incisions of the skin, as an excellent method for the cure of an anasarca; but he adds besides what follows: *cæterum Archigenes ita prodit: non sunt audiendi, inquit, qui per hujusmodi lancements nihil excerni dicunt, quin potius cum fiducia hæ ipsæ incutiendæ. Nam & nos inquit his cutis fissuris usi sumus, & per ipsas quantum plurimum exclusimus humorem, ut & femora, & suræ, & superior venter evidenter sint demissa & compressa*; but thus *Archigenes* expresses himself: “ they (says he) are not to “ be regarded, who say that by these punctures and “ incisions nothing is evacuated: for we ourselves “ have used this method of cutting the skin, and “ have discharged great plenty of humours by these “ wounds; insomuch that the swellings of the “ thighs, and legs, and upper belly, have evidently “ subsided and shrunk.” *Forestus* <sup>q</sup>, in the passage “ men-

° Essays and observations physical and literary, Tom. II. pag. 407. <sup>p</sup> Serm. X. Cap. xxx. pag. 246. <sup>q</sup> Lib. XIX. Observat. 41. Tom. II. pag. 394.

mentioned above, relates, that when the legs and thighs of the woman who had an ascites, were beat twice a day with prickly holly leaves, not only the swelling of these parts, but of the belly also, subsided. Before, §. 1215. it was noted, that the cellular membrane has a direct communication with the lymphatics; and practical observations shew, the watery serum collected in the breast is sometimes derived to the lower parts of the body, to the signal relief of the patients; as on the other hand it has frequently been remarked, that the breast is oppressed when dropscical swellings of the lower limbs suddenly disappear without spontaneous evacuations, or such as are procured by art: for the body freed from the pressure of the water in the anasarca, seems to be so disposed, that the veins become capable of re-absorbing the water collected in the larger cavities, and that this water so re-absorbed may be expelled by those new issues made on the skin. Thus also it often happens, that when the water is let out from the abdomen by tapping, the anasarca of the lower limbs gradually disappears: nay, sometimes also such sudden re-absorptions of the collected water have been observed. In an ascites, after about twenty pints of limpid water had been taken away by tapping, the belly swelled again in a few weeks; and when Dr. *Mead*<sup>r</sup> and the surgeon came in the morning to tap the patient, he smiling shewed them his belly soft and lax, although there had been no uncommon discharge, either by stool, urine, or sweats: some perhaps may suppose, that a tympany had succeeded to the ascites, but no mention is made of flatulles; and it is well known, that the ascites frequently returns after tapping: nor is it probable so experienced a practitioner as Dr. *Mead* should have mistaken the case. This excellent physician has observed<sup>s</sup>, that by incisions of the skin of the legs, made so deep as to penetrate the cellular mem-

<sup>r</sup> Monita & Præcepta Med. pag. 154.  
131, 132.

<sup>s</sup> Ibidem, pag.



membrane, not only great relief, but sometimes a perfect cure of an ascites is obtained, an incredible quantity of moisture flowing out from the wounds for many days successively.

This he confirms by an instance of a lady of quality, near fifty years old, but of a tolerable robust habit, who laboured under an anasarca and an ascites both at once, so that little hope was left of life; and in this dubious situation a discharge of the humour, by an opening near the ankle, was proposed. The lady, although very unwilling, yet yielded at last to the entreaties of her friends, and suffered an incision to be made in each leg: for ten successive days a gallon of water flowed out daily; and by the use of proper remedies she recovered, and her body returned to its pristine state. She lived five whole years in health, and then died of an acute disease. Dr. Mead was of opinion, that this whole collection of water issued partly from the cellular membrane, and partly from the bag formed by the aponeurosis of the abdominal muscles, and by the peritonæum, or by the distended double membrane of the peritonæum; but the re-absorption of the water from the cavity of the abdomen seems equally possible, as from such vast morbid cysts.

For making such issues in the skin other methods also have been used; such as burning the skin very deep with a hot iron, which is termed the actual cautery, or corroding by the potential cautery, and so making a deep eschar, which being separated from the living parts near it, by the suppuration formed all round, it gives a free course for the water collected in the adipose membrane to flow out. An ulcer thus formed, cannot so soon close as a slight fresh wound inflicted on the skin; wherefore such an issue keeps longer open. However, these methods of cauterizing are not much in use, because the patients are terrified at the thoughts of fire; and the eschar produced by the potential as well as the actual cautery,

cannot separate without an inflammation coming on first, and afterwards a suppuration all round it. Now as in these cases there is always some reason to fear a mortification, all possible care is taken to prevent an inflammation; and as the slight wounds made by scarification may be healed without any, or with a very gentle suppuration, this last method is generally preferred. Nor is the wound very easily closed while the dropping of the water continues; and if, on the discharge greatly abating, or quite ceasing, these little wounds should close before the water is all evacuated, new openings of the like kind may be made with little trouble. *Rhases*† directs an issue to be made in each leg, but at the same time gives this caution: *ne eas candenti ferro aperias, quoniam ignis siccet, laxam partem roborat ne ultra permeat. Ruptoria præter incertitudinem quantitatis ruptionis summe partem debilitant. Qua de causa plurima illaque irreparabilia, damna partis nempe mortificatio & gangræna subsequuntur*; “but do not open them by red hot  
 “ iron, because fire dries and contracts the relaxed  
 “ parts, so as to make it less pervious to the hu-  
 “ mours. Corroding or caustic preparation, be-  
 “ sides the uncertainty there is how great a quan-  
 “ tity of substance they will eat away, greatly  
 “ weaken the part: from which cause many, and  
 “ those irreparable injuries, ensue; namely, the fes-  
 “ tering and gangrene of the part.” And he af-  
 firms that he cured a noble lady, who had laboured under an ascites for two years, after many other remedies had been tried in vain, by opening two issues in her legs: *cum enim per hos fontes trium mensium spatium, serosus humor in magna copia emanaret detumuit venter, sitis quæ antea vexabat clamosa minuta est, & tandem chalybeati vitis potu usa, lymphati cum aqua decocta eupatorio ac rhabarbo, a morbo evasit*: “for after  
 “ that, for the space of three months, a great quan-  
 “ tity

† Zacut. Lusitan. Lib. II. Observ. N° 120 & 121. Tom. II. pag. 401.



“ tity of ferous humour had been discharged from  
 “ these issues, the swelling of the belly subsided, the  
 “ importunate thirst was abated, and at last, by the  
 “ use of a chalybeat wine diluted with a decoction  
 “ of agrimony and rhubarb, she recovered.”

But as extraneous bodies must be put into these issues to keep them open, from the perpetual irritation of these, sometimes the flesh all round is inflamed, which it is better to avoid. The same thing is true of setons, which have sometimes been used for the like purpose; for the thread left in the wound irritates in the same manner, especially, as is not unusual, it is drawn out every day.

To answer the same end vesicatories have been applied, by which the epidermis is raised into blisters full of lymph; which bursting a perpetual dropping follows, continuing till the dropsy is exhausted; a great quantity of urine also being discharged at the same time. It is well known that cantharides have the property of stimulating the urinary passages, and even sometimes occasion a troublesome strangury, if externally applied too largely. Perhaps vesicatories, large ones especially, are useful both ways. A celebrated physician<sup>u</sup> mixed  $\text{ʒiij}$  of cantharides with a sufficient quantity of leaven, adding thereto vinegar of squills, and applied this epithema to the thighs for the cure of an anasarca with good success, as appears from the two cases which he relates in the passage we have quoted. *Sydenham* indeed condemned the use of blisters<sup>w</sup>, fearing a mortification should be occasioned by them in the parts distended with water; but *Tozzetti* affirms, that he never saw any mortification happen in the parts where blisters were applied for the cure of an anasarca: he owns indeed that he feared this bad consequence, if they were used in a confirmed ascites.

K k 2

But

<sup>u</sup> Targioni Tozzetti *Offerat. Medic.* pag. 109.  
*de Hydrope*, pag. 635.

<sup>w</sup> *Tractat.*

But as all these issues (however made) must be kept open a long time, that the water may be totally evacuated, it is easy to see there will be more danger, if, together with the dropsy, there be also an acrimony of the humours; thus for instance, before, §. 1151. among the very pernicious effects of the scurvy, the dropsy was enumerated as one. Now we know, that very bad ulcers, scarce surmountable by any remedies, prey on the legs of scorbutic persons frequently, from whence oozes a sharp foetid ichor in a scorbutic habit; therefore there is some danger in making such issues in the lower limbs: but it must be confessed, that a dropsy is rarely cured, when it accompanies or follows a violent scurvy. But as in diseases in which, if left to themselves, certain death is foreseen, a doubtful remedy is better than none. Perhaps this method ought not even then to be rejected, especially as so many experiments have established the antiseptic virtue of the *Peruvian* bark, by which there is a great room to hope that a mortification may be prevented, or its progress stopt, if it be already begun.

## S E C T. MCCXLIII.

**A**S many instances are alledged of a dropsy being removed, by the water being discharged by urine, we may attempt this way, (nature pointing it out) by employing compound urinous fixed salts, animal specifics, vitriolated or dissolved metals, specific for the kidneys.

It was observed before, §. 1230. that making but little water, was one sign of an impending dropsy; whence, as we then said, *Van Helmont* placed the chief cause of the dropsy in the kidneys; and because he saw that dropfical persons made but  
little



little urine, and that of a high red colour, he says <sup>x</sup>, *sicuti deficienti potu nihilominus adhuc renes urinam curis eliciunt, licet parcam ita* & *in hydrope urina est, cruoris, non potus, non laticis*; “as when there is a want of  
 “drink; nevertheless the kidneys still draw urine  
 “from the blood, not from drink, nor from water:”  
 and soon after he goes on as follows, *non ergo renes cadere sinunt laticem proprio pondere, sed vere mittunt, non secus atque vere iterum trahunt eundem, trans omnem venarum cruorem, dum scilicet sanatur hydrops mictionibus*; “the kidneys therefore do not merely suffer  
 “the water to fall from them by its own weight;  
 “but they freely and actively send it from them, as  
 “they also draw the same from all the blood of the  
 “veins; namely, when the dropsy is cured by a discharge of urine.” Whence he concludes, that in the kidneys, *solvendum est itaque pertinaciæ vitium archæi ita ut mictio sequatur, si speranda est sanitas*; “we must subdue the vicious obstinacy of the archæus, so that a discharge of urine must follow, if  
 “we would hope for health.”

But as the water abounding in the blood after thin watery drink for instance, or after perspiration, is obstructed, is naturally secreted by the kidneys, and when secreted, expelled from the body; the reason is evident, why physicians have always thought of diuretics, which besides have this advantage over other remedies, that they give less disturbance to the body than vomits or purges, and do not weaken the patients so much. Whence also Sydenham<sup>y</sup>, who placed the principal hopes of cure in the use of emetics and strong purges, yet was obliged to have recourse to diuretics, for patients of weak constitutions, and for hysterical women. He confesses, *hydropes pro deploratis habitos viderit curatos viderit in iis, quorum crasis debilior purgantibus ferendis non fuit*; “that by the use of these alone he had seen despe-

K k 3

“rate

<sup>x</sup> In capitulo ignotus hydrops, pag. 411. §. 20. N<sup>o</sup> 4, 5, & 10. & pag. 412, 420. N<sup>o</sup> 19. <sup>y</sup> Tractat. de hydrope, pag. 629.

“rate dropfical cafes cured in thofe perfons, whofe  
“weak habit would not bear purges.”

Diuretics are very various<sup>z</sup>; for water and all watery liquors, to which may be referred thofe animal juices which are aceffent, fuch as whey, butter-milk, &c. if plentifully drank, increafe the quantity of water in the blood, and by this means promote the fecretion of water from the kidneys: but if in dropfical patients there fhould be a large quantity of water collected, and little is fecreted by the kidneys, there is a danger that the watery fwelling fhould increafe, by drinking plenty of watery liquors: for unlefs, when thefe are taken, the veffels of the kidneys can be fo relaxed and difpofed, as to tranfmit freely what is taken in, the diforder will increafe, as the fkin of dropfical perfons perfpires but little; fo that there is fcarce any hope that the cutaneous veffels fhould give a paffage to the water received into the body. On this account, phyficians rather chufe to give fuch things as are diuretic, by fome ftimulus or fome fpecific virtue. It is known, however, that medical or mineral waters drank in great plenty, if they can find a paffage by the kidneys, fometimes cure desperate dropfical cafes: of which a furprifing inftance was related before, §. 1230. But it muft be owned, after all, that the event is doubtful, as watery liquors taken plentifully, if they are not of fervice, are always injurious.

But as in health faline particles, which if they remained might be noxious, are alfo difcharged by urine: hence phyficians have thought, that the urinary difcharge would be promoted, by fuch things being taken as increafed the neceffity of it. It is certain, that falt things taken into the healthy body, increafe the fecretion of the urine, and for this caufe chiefly, that thirft being excited by them, more liquor is drank, and therefore more urine is excreted; for unlefs more drink be taken when falt things are eaten,

<sup>z</sup> Boerh. Inftitut. §. 1222.



eaten, the urine may be rendered more acrid, and the bladder more frequently stimulated to discharge it; but it will not always be more copious, which is the principal thing required in the cure of a dropsy. Besides, it does not seem to be always safe to increase thirst, which is trouble to persons in a dropsy, by giving saline remedies, as there are few who have command enough over themselves to endure it; whence, from their drinking plentifully, the dropsy will increase. Hence acid salts, which are also accounted diuretics, are preferred by many, as they also appease the thirst, and efficaciously resist putrefaction.

We read, that drinking five or six ounces of vinegar was of service in the cure of an ascites<sup>a</sup>. Others have used alkaline salts; and these we may try with the less scruple, as Dr. *Pringle's* experiments demonstrate, that alkali's do not so much promote putrefaction, as was formerly believed.

But the most successful method has been, combining fixed alkaline salts with a vegetable acid, so as to produce a sort of *tartarus regeneratus*. *Sydenham*<sup>b</sup> found these preparations very efficacious, namely, lixivial salts infused in wine; nor did he think it was of any importance from what species of vegetables they were taken; but as broom is easy to be had, and as this plant has ancient and medical tradition on its side, he ordered a cold infusion of a pound of the ashes of this plant in four pints of *Rhenish* wine, adding a pugil or two of common wormwood; then the liquor being strained off, he gave four ounces of it morning and evening, until all the swelling subsided: and he affirms, that he had seen this method succeed very well. As broom has a saltish juice, there is a considerable quantity of fixed salt left in its ashes. Many have recommended the ashes of bean-stalks, and others, the ashes of other plants.

K k 4

If

<sup>a</sup> Combalufier Pneumato-pathol. pag. 535.  
hydropes, pag. 629.

<sup>b</sup> Tractatus de

If to the lixiviated fixed salt of these plants an acid wine be infused, in the proportion of two pints of wine to an ounce of the salt, this makes a remedy adapted to this diuretic indication, and which possesses at the same time a powerful, dissolving, and deobstruent quality, and is of use both for removing the obstructions of the viscera, and attenuating the viscosity and lentor of the fluids; and therefore is of efficacy, not only to discharge the water, but to remove many causes of the dropsy.

Infusion of juniper berries is also given, which is famous for its diuretic virtues; but it should be made with a great quantity of the berries, as the body easily bears this remedy, and is not thrown into violent commotions by it. *Monf. Du Verney junior*<sup>c</sup> asserts, that wine medicated with the infusion of juniper berries, to which were added the lesser centaury, and drank as common drink, was of signal service to a man in an ascites. I have often found, that a strong infusion of these berries sufficed for the cure of an ascites, and of an anasarca, when the disease was not quite inveterate.

In the shops is kept rob of juniper berries, whereof if four ounces be diluted with two pints of distilled juniper water, and to this mixture be added two ounces of spirit distilled from juniper berries, a remedy is composed, which concentrates in itself the whole power of juniper berries, to which sometimes is added half an ounce of dulcified spirits of nitre, if the patients are very thirsty. If an ounce or two of this remedy be taken every three hours, it has usually a very good effect. Seed of ash also, infused in spirits of juniper berries, and taken as the former medicine, is of service.

Many other plants are commended for their diuretic quality<sup>d</sup>, from which various remedies may be prepared to suit this indication. It has sometimes

been

<sup>c</sup> Acad. des Sciences l'An. 1703. Mem. pag. 172. <sup>d</sup> Boerh. Institut. §. 1222. N<sup>o</sup> 7.



been known, that strong purges, given even in a large dose to dropfical persons, have caused no stools, but have brought on a prodigious flow of urine. Thus we read<sup>e</sup>, that fifteen grains of diagridium, with as many of the mercurius dulcis, to which were added six grains of gum guttæ, being given to a dropfical patient, caused no stools, but brought on a most plentiful discharge of urine. Mention was made before, §. 1237. 3. of administering purges, emetics, and other strong remedies, in so small a dose, or so corrected, as that they scarce have any sensible effect on the *primæ viæ*; and that then they often have a very considerable diuretic efficacy, and are therefore very useful for the purpose we are now considering. Thus it is observed, that the leaves of asarabacca, which, when they are given crude, or infused in water, purge the body upwards and downwards; and if they are boiled for an hour or two, act only by a diuretic efficacy<sup>f</sup>.

Many have commended the expressed juice of bruised millepedes in wine; and I have known it serviceable. Some have ventured to give cantharides; but terrible consequences sometimes follow this practice, which are excellently described by *Dioscorides*: so that, as there are other safe and sufficiently efficacious remedies, prudent physicians abstain from cantharides.

The root of the sea onion, or squills, seems to deserve the first rank. It is indeed disagreeable, by its extreme bitter taste, and because, when given in a large dose, it excites a nausea and violent vomiting. This was a remedy in esteem with the ancient physicians, for the cure of many difficult diseases, especially when infused in wine or in vinegar: whence vinegar of squills, *vinum scilliticum*, *mel & oxymel scilliticum*, were much in use. However, the ancients seem to have feared the strength of this root,

<sup>e</sup> De laisse Recueil d'observat. de chirurg. pag. 179. <sup>f</sup> Boerh. in loco modo citato.

root, and therefore have contrived various preparations to mitigate the violence of its operation. It is known, that the *trochisci scillitici*, which are an ingredient of the *theriaca*, are prepared from the bulb of the sea onion, or squill, baked in an oven; and from the pulp of this root, to which flour is added, these troches are made.

*Aetius* <sup>z</sup>, enumerating those remedies which are drank by dropfical persons, to excite a discharge of urine, says, they will find benefit, *si acetum scilliticum assidue sorbeant: etenim ex eorum numero quæ citra gravitatem urinam cient, est scilla assata, delineta ex melle: aut scillam assatam terito eique farinæ ervi par pondus admisceto, siccato ac 3j. ex vino dato*; “ if  
 “ they drink every day vinegar of squills: for of  
 “ the number of those remedies, which excite urine  
 “ without molesting the body, are roasted squills  
 “ made into a linctus with honey: or else, take  
 “ roasted squills, rub them, and mix the powder  
 “ with an equal quantity by weight of flour of vetch-  
 “ es; dry the powder, and give thereof 3j. in  
 “ wine.” *Celsus* <sup>h</sup> directs binding boiled squills over dropfical swellings; and for the cure of a leucophlegmatia, he says, *quod si valens, est qui id accipit, ei scilla cocta supra ventrem deligatur*; “ if the per-  
 “ son be strong, boiled squills may be bound upon  
 “ his belly at the same time.” *Cælius Aurelianus* <sup>i</sup> ordered a pound of well purified squills to be boiled with three *sextaries* of wine (a sextarius is about a pint and an half); to a third part then of this wine he gave, *duo cochlearia*; & *proficiente curatione, usque ad uncia unius accedere modium oportet. Sed hoc erit post gestationem adhibendum, vel post perunctionem corporis, & ante sumptionem (citi) cum plurimo interjecto tempore*; “ two spoonfuls; and in the progress of the  
 “ cure, we may rise to a tierce of an ounce. But  
 “ this must be given after riding, or after anointing  
 “ the

<sup>z</sup> Serm. X. Cap. xxxvi. pag. 240.      <sup>h</sup> Lib. III. Cap. xxi. pag. 164.      <sup>i</sup> De morbis chronic. Lib. III. Cap. viii. pag. 477.



“ the body, and a considerable time before eating.” Whence it appears, that the ancients used squills with very great caution only.

As I have always been of opinion, that the dose of such medicines, from which any bad consequences might be feared, was rather to be lessened, than that their efficacy should be blunted by operose methods of preparation, I rather chuse to give the fresh and crude root; for although it be an exotic, yet it is capable of being preserved long fresh and full of juice: for I have frequently seen, to my wonder, the root of the squill preserved in boxes for many months, not only remaining entire, but to have vegetated. I order half an ounce of such a fresh root (only taking off the dry outward coats) to be infused in two pints of wine, and I give half an ounce of this *vinum scilliticum* to a grown person in the morning fasting. A slight nausea commonly follows without vomiting, and suddenly there comes on a plentiful flow of urine, insomuch that I have known six, eight, nay, twelve pints excreted in the space of a few hours, to the great relief of the patient. The dose may be lessened or augmented; according to the different age and strength of the patient. For I was very solicitous to observe how great a dose was sufficient to occasion a slight nausea only, without a vomiting; for then I was sure the medicine would prove a diuretic: but if it made the patients vomit, so great a flow of urine did not follow; nor did it, if they had no nausea from the medicine.

This seems to be the reason, why a celebrated author<sup>k</sup> has given these cautions to prevent vomiting from the use of squills; *et si quidem scillæ infusio datur cum aqua cinnamoni raro vomitum ciēt: sed modo per alvum, modo per renes copiosissimo flumine excernitur. Et profecto hanc ob causam fit, ut adeo in hydropicis celebretur ejus usus;* “ if the infusion of squills be  
“ given

<sup>k</sup> Russel. de tabe glandulari, pag 68.

“ given with cinnamon water, it seldom excites vomiting; but sometimes procures a plentiful evacuation by stool, and sometimes by urine; and truly this is the reason that it is held in so much esteem for the cure of the dropsies.”

The dose of this remedy differs much for different persons. I have seen some, who could scarce take half an ounce without vomiting; and in others, thrice that quantity was requisite to excite a nausea.

The use of this wine is to be repeated every day till all the water is evacuated: but as the patients gradually become less and less affected by this remedy, it may be prudent to increase the dose, so as to render it efficacious. But although squills, and all preparations into which they enter, have a very considerable dissolving and attenuating power, yet they are not always sufficient alone to remove the cause of the dropsy; and there will frequently be occasion to use other remedies. We consider here only the evacuation of the water by urine, for promoting which, this remedy has a signal efficacy. But it is evident, that this remedy can be supposed of use only when the cavity, in which the water is lodged, is so disposed as to be capable of re-absorbing them; otherwise they could not be discharged by urine. But the patients are less weakened by the use of squills than by strong purges; and I generally make trial of this remedy, before tapping is attempted.

#### S E C T. MCCXLIV.

**V**OMITS dissolve viscidities, agitate obstructed vessels, expel stagnating fluids; whence they are of wonderful utility in this disease.

Before,



Before, §. 1237. we mentioned the use and efficacy of emetics in the dropsy, when given in so diminished a dose, as to excite only a slight nausea, and rather to act by stools or urine. But we come now to treat of the effect of vomits, not as they evacuate the water, but rather as by the violent concussion which attends vomiting: the collected waters are so moved and shaken, as to become capable of being first re-absorbed, and afterwards expelled by various passages from the body. Before, when we treated of vomiting as a symptom of a fever, §. 652. mention was made of that convulsive motion of the muscular fibres, of the fauces, œsophagus, intestines, diaphragm, and abdominal muscles, which happen during vomiting. At the same time we observed, that by vomiting, not only all the contents of the stomach and intestines were expelled, but also the humours which pass from the other abdominal viscera into the stomach and intestines: it appears from hence, how extensive is the efficacy of emetics. But we have already seen, that obstructions in the viscera are among the causes of a dropsy; and that sometimes the water lodged in the cavity of the abdomen grows viscid, nay, is changed into a tremulous jelly, which can be rendered fluid again, and by that means more disposed to be re-absorbed; and by the same concussion, obstructions of the viscera may be opened, if they are not already grown to a schirrous hardness. Wherefore we see, that skilful physicians had good reason to place great hope in the use of emetics for the cure of dropsies of other kinds, as well as an ascites; and that, as *Aetius*<sup>1</sup> said, *maximum hydropis subter cutim auxilium vomitus prestant*; “vomits are of great use in an anasarca:” and he would have them tried even on children in an anasarca, although it was difficult to gain their consent; wherefore he directs that the tonsils should be tickled with feathers, or with the fingers, dipt in oil, to provoke

<sup>1</sup> Serm. X. Cap. xxxi. pag. 247.

provoke vomiting: and he mentions many other artifices to the same end. For the whole body is shaken in vomiting, and almost all the muscles are put in agitation: but although it does not seem that a discharge of the waters should follow presently after vomiting, but only that the water should be so diffused by the effect of the concussion of the muscles, as to be more readily re-absorbed; yet Sydenham<sup>m</sup> observes, that after vomiting has ceased, purging usually comes on, which evacuates the waters re-absorbed by means of the concussion of the muscles in vomiting; nay, he observed, that after repeated emetics, the waters were discharged both upwards and downwards<sup>n</sup>. At the same time he tells us, that if the swelling of the abdomen in an ascites be but inconsiderable, the waters are not so readily evacuated by vomits, as when the belly swells with a greater quantity of water; *Et enim aquarum moles dum emetici operatione agitatur ac concutitur, ad earundem evacuationem mirè confert, atque eam ob causam nisi venter insigniter in tumorem attollatur, omnino convenit ut tota res evacuationibus per inferiora committatur*; “for the very mass of waters itself, when it is shaken  
 “and agitated by the operation of the emetics, contributes wonderfully to their evacuation; and on  
 “this account, unless the belly be considerably  
 “swelled, this whole affair is best left to remedies  
 “evacuating downwards.”

It is easy to conceive, that the kind of press formed by the abdominal muscles and diaphragm, acting in conjunction, has more force on the contained waters, if the abdomen be greatly distended with them.

<sup>n</sup> Tractatus de hydrope, pag. 617.    <sup>m</sup> Ibidem, pag. 625.



## S E C T. MCCXLV.

**B**UT they must be powerful, often, and repeated at short intervals.

This was Sydenham's method°, which he pursued boldly enough: for he gave a very poor woman, who was more than fifty years old, and after a long intermitting fever had been in prison three years, had suffered greatly from cold, and whose abdomen had swelled with an ascites to such a degree, that he owns he never saw a dropical swelling of equal size; to this woman, I say, he gave a strong antimonial emetic, namely, an ounce and an half of infusion of *crocus metallorum* for three successive days, and afterwards, every other day till she had taken six doses of this emetic. The swelling of the abdomen, indeed, grew less after taking three doses, and the patient was greatly relieved; but the body was at the same time thrown into such strong commotions by the violent operation of the remedy, that he did not think it safe to persist in the use of the emetics, but was obliged to finish the cure by the repeated use of purges; and these he was frequently forced to omit for a time, as hysterics followed the use of cathartics, although not to such a degree as from the emetics. Such a method of cure has this inconvenience, that there is need of powerful remedies, which must be frequently repeated, and at short distances of time, as otherwise the patients begin to swell again. But certainly, that the habit may be able to bear such violent agitations, the viscera ought to be in so sound a state, as to bear the concussion produced by vomits, without injury; and the strength should be still tolerably firm.

It

° Ibidem, pag. 624.

It is to be noted besides, that after so many evacuations, the cure of the dropfy is not compleat, as the phyfician cannot be certain that the caufe of the dropfy is removed; he has only let out the water effused into the cavities. A third condition ftill remains, to render the cure perfect, (fee §. 1231.) namely, that the diforder of the debilitated viscera be removed, whether this has been the caufe or the effect of the dropfy. If now we confider how great a ftain is put on the viscera, by the repeated use of ftrong remedies, will it not be fafer to difcharge the waters from the cavity and thorax of the abdomen by tapping; or in an anafarca, to make iffues in the depending parts of the body, by which the water collected all over the habit may ooze forth? That thefe methods are fafe, appears from what has been faid before; and there feems fcarcely any doubt, but that they may be followed with lefs trouble and danger to the patient, than attends the use of violent emetics or cathartics.

## S E C T. MCCXLVI.

**T**HES E emetics generally prove brisk purges alfo, fo that they are useful by a double efficacy, and often alfo by a third, namely, a diuretic operation.

The virtue of emetics and cathartics have fo great an affinity, that emetics almoft always purge, and purges of the ftronger fort efpecially excite vomiting when they begin to act. *Sydenham* therefore recommended infufion of *crocus metallorum*, of which he gave an ounce and an half, and to fuch as were hard to purge, two ounces <sup>P</sup>, *quia cefante vomitione in catharfin*, (τὴν κάψω) *folet definere*; “ becaufe when the vomiting ceafed, it ufed to operate by purging down-  
“ wards

<sup>P</sup> Tractatus de hydrope, pag. 617, 618.



“wards.” Nay, if a copious purging did not follow, he added to this infusion, syrup of buckthorn and *electuarium de succo rosarum*. Hoffman<sup>a</sup> found, that emetics given for a dropfy, in a dose a little larger than usual, repelled the watery serum downwards, and more seldom upwards: and in another place he relates a happy cure which he had wrought, by adding ipecacuanha to purges; the effect whereof was, that not only the belly was sufficiently purged, *verum & mira aquosi liquoris, sanguine parum tincti quantitas, per uterum effluxerit*; “but a prodigious quantity also of a watery fluid was discharged from the womb.” The excretion of the urine is likewise frequently increased, when the extravasated serum begins to be re-absorbed, in consequence of the concussions occasioned by vomiting; and this fluid afterwards issues from the body by various passages, if the cure proceed happily.

## S E C T. MCCXLVII.

THE discharge of the serum by stools, is procured by the use of strong purges, taken in various, but chiefly liquid forms, and repeated frequently at short intervals.

Physicians have placed great confidence in the use of purges for the cure of a dropfy; and they have been the more induced to this, as nature often indicates this method of recovery. Hippocrates<sup>r</sup> has said, (as we took notice formerly, §. 423. 3. and §. 720.) *hydropicis secundum venas aqua in alvum prorumpente solutio fit*; “when the water in dropfical persons, passing through the veins, goes off by stools, they recover:” and elsewhere<sup>s</sup>, *hydropi incipienti*

VOL. XII. L I

<sup>a</sup> Med. rat. system. Tom. III. Sect. 11. Cap. v. pag. 483.

<sup>r</sup> Coac. prænot. N° 461. Charter. Tom. VIII. pag. 879. <sup>s</sup> Ibidem, N° 457. Ibidem, pag. 878.

*cipienti alvi profluvium aquosum superveniens, citra cruditatem solvit morbum*; “a watery diarrhœa not crude, coming in the beginning of a dropsy, cures the disease.” In another passage he speaks well of a brisk purging downwards<sup>t</sup>, *subaquofo & lienoso, albâque pituita detento, alvus vehementer perturbata bonum*; “when any one is inclined to a dropsy, and has a disorder of the spleen, or is afflicted with a leucophlegmatia, it is good for them to have a violent diarrhœa.” In another place, where, under the title of a leucophlegmatia, he describes an universal anasarca, he says<sup>u</sup>, *huic si venter per morbi initia sponte sua turbetur, sanitati est proximus*; “if a spontaneous diarrhœa come on in the beginning of the disease, then the patient probably will recover;” and then he adds, *quod si non purgetur medicamentum deorsum purgans exhibeto*; “but if there be no such diarrhœa, let a cathartic be given:” elsewhere, treating of the same disease in a more advanced state, he says<sup>w</sup>, *si alvus sponte turbata non fuerit, oneoro dato, aut hippophae, grano enidia, vel magnesio lapide purgare oportet*; “if there be no spontaneous diarrhœa, then we should purge with oneorum, or teazle, or grain of cnidium, or magnesian stone.” Hence it appears, that *Hippocrates* expected much benefit from a purging, when nature brought it on in a recent dropsy; and that, where this failed, he endeavoured to promote it by art, and that by sufficiently acrid medicines, and even when the disease was not in its beginning. But we are to note, that the patient’s strength was entire, when *Hippocrates* tried this method; for he orders, *ut postero die mane viginti stadia obambulet, ut reversus panem exassatum: parvum comedat, & opsonium allium coctum habeat, vinique ejusdem (nigri nempe, austeri, & fortis) pauculum meracius vibat*.

<sup>t</sup> De morb. Lib. I. Cap. iv. Charter. Tom. VII. pag. 535. & Aphor. 29. §. vii. Charter. Tom. IV. pag. 305. <sup>u</sup> Ibidem, Lib. II. Cap. xxviii. Charter. Tom. VII. pag. 579. <sup>w</sup> De intern. affect. Cap. xxii. ibidem, pag. 654.



*bat. Deinde stadia triginta ambulet, quamque tempus-  
tuum fuerit quantum prandere consueverat, cœnat pro op-  
sonio maximè quidem pedes suillos aut capita habet. Sin-  
minus galli carnibus aut suillis, tritis utatur. Piscibus,  
vero scorpio, aut dracone, aut cuculo, aut calionymo, aut  
gobio, aut alius piscibus æqualem facultatem habentibus.  
Ex oleoribus, alliis solis utatur, neque olerum ullo alio.  
Hæc autem quam plurima comedat tum cruda, tum assa,  
& elixa singulis diebus semper plura & pro ciborum  
ratione, ex paucis plus laboret; “ the next day,  
“ let him walk twenty furlongs. On his return,  
“ let him eat a little toasted bread, and with it  
“ boiled garlick, and drink a little strong wine un-  
“ diluted. Then let him walk thirty furlongs; and  
“ at a proper hour, eat as much at supper as he used  
“ to do at dinner. His victuals should chiefly be  
“ pigs feet or heads, or else fowls or pork minced.  
“ Of fish, he should take the scorpion, the quaviver,  
“ the cuculus, the calionymus, the gudgeon, and  
“ such other fish as have the like qualities with  
“ these. Of vegetables, he should use none except  
“ garlick alone, of which he should eat much, both  
“ raw, roasted, and boiled, increasing the quantity  
“ every day; and increasing also exercise and fa-  
“ tigue, in proportion to the quantity of his food.”*

From which it is evident, that *Hippocrates* used  
purging in the cure of a dropsy when recent, and  
even of long standing, in such patients whose viscera  
had still firmness left to digest strong food twice a  
day, and their strength sufficient to bear motion and  
fatigue. Nor does he appear to have attempted the  
cure by this method, when the disease had lasted a  
very long time; for he adds, *judicatur autem triginta  
diebus letalis sit necne*; “ it is determined in thirty  
“ days, whether it will be mortal or not.” Nor  
does the dropsy, for which he advises cathartics,  
take rise from a cause so little surmountable as schir-  
rhusses of the viscera; for he says, *hic morbus potissi-  
mum per æstatem oritur, ex aquæ potu, ad hæc etiam ex  
multo somno*; “ this disorder generally comes on in

“ summer, from drinking water, as also from im-  
 “ moderate sleep.”

Nor does he seem to have expected much good from purges, if the patient were much swelled with the dropsy; for he says\*, *bunc si incipientem curandum accesseris, priusquam aqua exuberante distentus fuerit, medicamenta propina quibus aqua, aut bilis per interiora purgetur. Bilis vero minime movenda*; “ if  
 “ it attend the patient in the beginning of the dis-  
 “ ease, administer remedies to purge the water and  
 “ bile downward. But bile is not to be moved:” for in dropfical persons, the bile is frequently deficient both in quantity and quality; and they, whose bile is copious and acrid, are less inclined to this disease. Certainly, if the conditions (§. 1239.) are present, cathartics often compleat the cure. Among many instances to this purpose, I remember one, in which I cured a man of an universal anasarca and ascites both, with two doses of a purgative remedy. I gave him two ounces of jalap root with four grains of turbith mineral at a dose, with so good effect, that the swelling totally subsided, and he perfectly recovered. But he was no more than thirty years old, robust, always healthy before, and had fallen into a dropsy merely from drinking a great quantity of small beer in hot weather on ship-board, and had gone to sleep with his body not well covered, and the air had cooled suddenly while he slept, by a storm of thunder. But so good success is not to be expected, when the disease has grown old, and the causes more obstinate.

It is observed, that dropfical persons, especially when the disease has got to its height, are scarcely moved but by strong purges; and even of these, if they are to be repeated, the dose must be increased, or some more stimulating ingredient used. If we run over the list of hydragogues, we shall find they are all very strong purges, and which also possess a  
 power

\* Ibidem, Cap. vi. pag. 626.



power of dissolving the crasis of the blood into a thin and putrescent fluid, and expelling it so as to be dissolved by stool: for when the cure of a gonorrhœa, or other venereal complaint, is attempted by frequent purges, we see plainly the texture of the blood is dissolved, the lips, eyes, and gums grow pale, and the whole body loses its plumpness. Now in an old ascites, the emaciation is so much the more considerable, as the swelling of the abdomen is greater, (see §. 1230.) If, therefore, by hydragogue purges, the little blood which still circulates through the large vessels, be all attenuated, and its crasis broken down, there is a danger lest the patient's strength be exhausted by the operation of these remedies, unless the water, being suddenly re-absorbed from the abdomen, should be discharged by stools, and thus room be made for corroborating remedies and a restorative diet.

Is it not clear therefore, that the water may be more speedily and more safely discharged by tapping?

If we recapitulate the remedies mentioned in the *Materia Medica* of our author, under this section, and §. 1245. we find there, turbith mineral, the fresh express'd juice of the middle bark of elder, leaves of bind-weed, elaterium, or the inspissated juice of wild cucumber, jalap, scammony, and Boyle's *luna purgativa*, called also the hydragogue of *Angelo-Salæ*<sup>v</sup>.

From what we have already observed it appears, that *Hippocrates* used tolerably acrid remedies; nay, *Celsus*<sup>z</sup>, who has said, *alvum moliri cibo melius est quam medicamento*; "it is better to move the belly by food than by physic;" yet advises for the cure of a dropsy, (among other less powerful remedies) if necessary, to give *iridem, nardum, &c. uvam staminiam, quam σαφίδα αγγίαν Græci, vocant*; "orrice, nard, flavefacre;" and which is certainly very

L 13

sharp:

<sup>v</sup> Boerh. chem. Tom. II. pag. 468.  
pag. 162, 163.

<sup>z</sup> Lib. III. Cap. xxi.

sharp : but he adds, *primo quæ lenissima ex his sunt, id est, rosæ folia vel nardi spica tentanda sunt* ; “ how-  
 “ ever, the mildest of these must be tried, that is,  
 “ the rose leaves or spikenard.” Nor does he seem  
 to have much approved of the frequent use of purges  
 at short intervals ; for he says afterwards, *hæc lenus  
 communiter de omni specie præcipi potest : si vehementius  
 malum est, deducenda ratio curandi est* ; “ thus far ge-  
 “ neral rules may be laid down for all the species of  
 “ the distemper ; if the malady rises to a greater  
 “ height, different methods of cure are required,  
 “ according to the different degree of the disease.”

However Sydenham<sup>a</sup>, and many others affirm, that  
 they have found, that when the expulsion of the  
 water was attempted by purging, the cure did not  
 succeed if long intervals were left between the purges.  
 Whence they were not willing to leave off the use  
 of these remedies, if the patient could support them  
 till the whole mass of the waters was evacuated.  
*Cæteroquin quantum libet copiosa catharsis præcesserit  
 aquis denuo colligendis ansam præbebimus, atque ex hac  
 induciarum occasione quasi victoria jam parta ubi nesci-  
 entes tandem loco pulsi re infecta turpiter fugabimur* :  
 “ However copious a purging has preceded, we  
 “ shall give opportunities for the water to collect  
 “ again ; and by allowing them this truce, we, like  
 “ them who know not how to use a victory gained,  
 “ shall lose our ground, and be repulsed with dis-  
 “ grace.” But he would have us carefully enquire,  
 whether the patient is easily purged, as men are  
 very different in this respect ; and sometimes very ro-  
 bust men are moved with gentle purges, and on the  
 other hand, persons of weak constitutions need  
 stronger physic : but he preferred on the whole strong  
 purges. Nor did he fear a hippercatharsis, as he  
 could so easily stop the purging by liquid lauda-  
 num.

Some-

<sup>a</sup> Tractat. de hydrope, pag. 613, 614.



Sometimes also, purges act as diuretics; but seldom operate by stool, urine, and sweat at once. *Seneka*, or *Polygala Virginiana*, has been known to have this effect. An ounce of this root was boiled in a pint of water to half the quantity, and three spoonfuls of the training were given to a man labouring under an universal ascites and an anasarca; there was a fever at the same time: however, the success was good, although the spleen was swelled and hard; for the dropfical swelling subsided, and the fever was removed<sup>b</sup>.

A liquid form is preferred for purges, because the *primæ viæ* are often dry, so that pills and other viscid remedies will scarce dissolve; and hence their action will be blunted.

## S E C T. MCCXLVIII.

**D**ISPERSION is effected by heat from fire, stoves, vapour, and the heat of the sun; of salt, dung, sweat, or perspiration, being excited by these means.

As daily observation evinces, that moist bodies in dry and warm air grow gradually dry, the moisture being dissipated in time: hence this has been attempted on dropfical bodies, with the hope, that some part of the superfluous moisture might be dissipated daily. But the air which dries moist bodies surrounds them on every side, whereas the water of a dropsy lodges in the cavities of the body: or if it be dispersed through the cellular membrane, the skin surrounds it, which will hinder its dissipation.

*Aretæus*<sup>c</sup>, treating of the dropsy following diseases of the liver, has said, that the safest cure of all is, if the sweat, flowing abundantly, removes the disease;

L 14

<sup>b</sup> Académie des Sciences l'Ann. 1744. Mem. pag. 55. <sup>c</sup> De caus. & sign. morb. diut. Cap. xiii. pag. 43.

disease; but he observes, that it is not usual for dropfical persons to have much moisture upon the skin. Whence it is evident, much good cannot be expected from this attempt to dry the dropfy by a dry, warm air.

But it should seem, that an increase of warmth may be serviceable in another way to dropfical persons. We have often observed already, that a moisture exhales from the arteries, in the form of a steam, into the cavities of the body, and is re-absorbed in the same form by the veins, before it condenses into a watery fluid: whence in healthy animals opened alive, all the contents of the abdomen and thorax are found moist, but no collected fluid appears, only a moist vapour with something of an urinous smell exhales. As now the legs and thighs of dropfical persons are manifestly cold, nothing is here resolved into a vapour, nothing therefore is re-absorbed, but the watery fluid is accumulated more and more, which the extremities of the arteries persist to effuse. If, therefore, art applies an unusual heat, so that some part of the collected water dissolves into a steam, this will be re-absorbed, and the swelling will decrease. This was evidently shewn by the case related, §. 1242. wherein, by a fortuitous burning of spirits of wine, an anasarca of the legs and thighs, which had lasted many years, subsided, so that the whole swelling vanished in one night, and never returned, the whole mass of water being evacuated by urine: for when once the water is re-absorbed from the places where it has stagnated, it easily finds a passage for its discharge from the body.

Every one knows that by frictions, first the parts to which it is immediately applied, and afterwards the whole body, grows warm. The ancients made great use of them<sup>d</sup>; but they used those of the softer kind, lest the skin, stretched by the dropfy, should be

<sup>d</sup> Celsus, Lib. III. Cap. xxi. pag. 164.



be injured; at the same time they exposed the swelled part to the sun; *sed non nimium, ne febriculam incenderet: si is vehementior est, caput velandum est, utendumque fricatione*; “but not too much, lest it light up a fever: if the sun is too powerful, the head must be covered, and friction must be used.” They endeavoured by all means to excite warmth on the skin, by walking, running, or motions, which weakness will not sometimes admit; *evocandus est sudor, nec per exercitationem tantum, sed etiam in arena calida, vel laconico, vel clibano similibusque aliis: maxime utiles sunt naturales & siccae sudationes; quales super Baias habemus in myrtefis. Balneum atque omnis humor alienus est*; “sweat is also to be procured, not only by exercise, but also by hot sand, or the laconium or clibanum (a kind of stoves) and such like means; and natural and dry sweating-places are very beneficial, such as we have at *Baiæ*, among the groves of myrtle. The bath and all moisture is hurtful.” The ancients therefore approved of a dry heat; and to this day, journeys to *Portugal*, *Spain*, and *Naples*, are advised to patients in this disorder.

*Hippocrates*<sup>f</sup> says, that a person in a dropsy should endure fatigue, and should sweat; but if the patient's strength is not equal to such exercise as will excite warmth, then external heat should be employed to supply the defect. I ordered hot bricks to be applied to the abdomen of a patient in an ascites, not without success; but the swelling of the abdomen was not very considerable. Physicians have employed various methods to warm the skin, and to give motion to the stagnating fluid, to the intent chiefly of dispersing the water by sweat. *Schenke*<sup>g</sup> advised men of small fortunes, *ut mensæ incubantes universum corpus immitterent in clibanum, recenti pane extracto etianum tepentem, ita tamen ut caput extra*

<sup>e</sup> Ibidem, pag. 162.  
 ter. Tom. IX. pag. 347.

<sup>f</sup> Epidem. Lib. V. Text. xli. Char.  
<sup>g</sup> Lib. III. pag. 442.

*extra præfurnium pulvinari innixum foret, ut libera maneret expiratio, sicca calidiori aëre suffocationis periculum nasceretur;* “ that they lie down with their  
 “ whole body on a table in an oven, immediately  
 “ after the bread was drawn out, in such a manner  
 “ however, as to have the head leaning on a pillow  
 “ without the mouth of the oven, to leave the  
 “ breath free, lest the heat should suffocate.” He also advised a vapour bath, as hot as the patient could bear it; but as a vapour bath will relax the parts, already overstretched by the water, this perhaps would not be proper. If any thing of this kind were to be tried, perhaps the steam of spirits of wine set on fire would be preferable, if directed immediately to the dropfical part; a particular method of which mention was made, §. 529. in treating of the cure of the diseases of the bones.

As dung has a warmth nearly the same with that of the human body, this, as we read, has also been employed for the cure of a dropsy. Thus *Heracitus*, when from misanthropy he had retired into the mountains, living there on pot-herbs and other vegetables, he fell into a dropsy; and shutting himself up in a stall of oxen, and wrapping his body in their dung, he found out a cure by this method. *Hermippus* relates, that he exposed himself to the rays of the sun, and ordered some boys to smear him over with ox's dung; but that he died the next day. Another has related, that sticking in the dung, he was torn by dogs. According to others, he was cured of the dropsy, but afterwards died of another disease<sup>h</sup>. Whatever were the event, it is certain the method was attempted. The warmth of dung is easily enough borne by the body; for it is asserted, that hens eggs may be hatched by this means: and I know a very learned man who is now alive, who in his childhood, being very poor, got safe through the small-pox, having no covering but dung to keep off the extreme cold

<sup>h</sup> Diogen. Laert. Lib. IX. Cap. 1. pag. 964, & seq.



cold of the winter of the year 1709, which was so severe over all *Europe*.

An attempt has also been made to disperse dropfical swellings, by applying sea-salt decrepitated, perfectly dry and warm, wrapped in a linen cloth. This remedy is serviceable, not by the heat alone, but as salt draws water to itself from the air, although it appear very dry: hence a hope has been entertained, that it might unite the water in an anasarca to itself, and thus diminish dropfical swellings. Nor is this method without success; if the application be frequently renewed, partly that a more speedy effect may be obtained, partly lest the salt, melting into a brine if kept long on the part, should corrode or inflame the distended skin, and occasion ulcers difficult of cure.

At the same time it appears also, that perspiration and sweat are then only useful, when the stagnating water begins to be re-absorbed; or when there is hope, that by the application of external warmth of the fire, the sun, hot sand, &c. it may be disposed for re-absorption, for then sweat usually follows; but if, when the belly is prodigiously swelled in an ascites, warm stimulating sudorifics should be given, these would not act upon the extravasated stagnating water, but would only expel from the body that little remaining fluid, which still circulates through the vessels, and supports life.

## S E C T. MCCXLIX.

**A**ND also very much by strict restraint on drinking, living on biscuit, with a little salt, and a very little rich wine.

This method also has sometimes been tried with success; nay, great physicians have expected a cure from it, if the viscera were not corrupted, and if no insurmountable cause of the disease was concealed in the body; in such case no method will cure, and all that can be done is to apply palliative remedies. All physicians are unanimous in advising, that the patients should drink very sparingly, and that what they drink should be very strong: but few can support an obstinate abstinence from all drink; wherefore we see, that physicians have been solicitous to find out such things as might allay the urgency of thirst, and render abstinence from drinking supportable. *Sydenham*<sup>i</sup> directs, that the mouth should be washed with cold water acidulated with elixir of vitriol: he advises also the chewing of lemons, or keeping tamarinds in the mouth. Others persuade the holding liquorice root in the mouth, which root, from this use, has been called *ἀδυσή*. All these things have this effect, that either by the motion or chewing, or by a gentle stimulus on the glands, the mouth is kept moist, and the thirst thereby rendered less tormenting. For the same purpose, some advise the eating biscuits with a little salt: for though all salt things, taken in large quantities, increase thirst; yet a little salt, by stimulating the salival glands, moistens the mouth. The *Asiatics* know this, for they rub the tongue and gums of their camels with salt, on journeys through dry and desert places, by which means these

<sup>i</sup> *Tractatus de hydrope*, pag. 632, 633.



these animals endure the want of drink for many days. The warlike nation of *Hungary* refresh their tired and thirsty horses by the like method.

With how great difficulty dropfical persons endure their prodigious thirst, appears from the instance of *Antigonus's* friend, who was carefully kept from all drink by the king's order, yet hastened his death by drinking his own urine<sup>k</sup>. *Metrodorus*, a disciple of *Epicurus*, attempting to cure himself of a dropsy by abstinence from drink, and not able to support thirst, drank, and then vomited up the liquor again: whence *Celsus*<sup>l</sup> makes this conclusion, *quod si redditur, quidquid receptum est multum tædio demit: si a stomacho retentum est, morbum auget ideoque in quolibet non tentandum est*; “now if whatever is taken be  
“brought up again, it lessens the uneasiness consi-  
“derably; if it be retained in the stomach, it in-  
“creases the disorder; therefore this must not be  
“attempted by every one.”

There have been some however, who have been willing and able to endure the torment of thirst, and saved their lives at this price. A surprizing case particularly is related of a dropfical peasant<sup>m</sup>, of whose cure the physician despairing, that he might however give him some advice, said with a smile, *Friend, if you would be cured, you must drink no more than is absolutely necessary to support life*. A year after, he returned to the physician to obtain permission to drink, he having totally abstained till then from drink. The physician readily gave leave, and the peasant continued in health.

A *Piedmontese* nobleman who had an ascites, was compleatly cured by total abstinence from drink for a month<sup>n</sup>. Dr. *Mead*<sup>o</sup> saw two persons cured of a very bad ascites, by abstinence from drink; but they washed

<sup>k</sup> Celsus, Lib. III. Cap. XXI. pag. 161.

<sup>l</sup> Ibidem, pag. 162.

<sup>m</sup> Marcell. donat. histor. Lib. IV. Cap. XXI. pag. 234, versa.

<sup>n</sup> Hildan. observ. med. chirurg. Cent. IV. Observ. XLI. pag. 313.

<sup>o</sup> Mon. & præcept. med. pag. 143.

washed their mouths and fauces with juice of apples or lemons, and thus allayed their thirst.

Biscuit is allowed for the food, principally because it is of very easy digestion, dissolving as it were instantaneously, being grateful to the taste, and not loading the stomach. A small quantity of racy wine, such as are *Greek* and *Spanish* wines, *Tokay*, &c. are advised also, to recruit the strength, which end it answers very well, if the biscuit be eaten, soaked in wine of this sort.

## S E C T. MCCL.

**T**HE third indication (§. 1236.) is best answered by chalybeat wines, stale, and gently astringent corroboratives, taken in due time and in a proper quantity; by dry food, generous old wine of an astringent quality, and by motion.

The general indications for the cure of a dropsy were enumerated, §. 1231. We hitherto considered the two first of these: it remains, that we treat of the third and last, namely, how to restore to soundness and strength the debilitated and diseased viscera, whether their disorders be the cause or the effect of the dropsy.

*Sydenham*<sup>p</sup> acknowledges a weakness of the solids to be a cause of dropsies; and he has remarked, that women, whose fibres are more relaxed, have this disorder more frequently than men. He also observes, that this disease increases more in winter than in summer, and more in rainy than in clear weather. Cold, indeed, rather braces the solids; but it is to be noted, that persons in a dropsy do not bear cold well: hence they are perpetually sitting by the fire, or keep up in rooms well warmed with

<sup>p</sup> *Tractatus de hydrope*, pag. 608—611.



with stoves, in slothful rest, and can scarce use any exercise; whence their debility and inactivity increase. He also accounted one cause of the dropsy to be a mucous lentor and coldness of the fluids, which he called a weakness of the blood; which cacochymia he had observed to arise from too great a loss of blood by wounds, or from too frequent bleedings, as also from such food as could not be subdued and assimilated by the efficacy of the viscera, vessels, and sound humours before existing in the body: hence, instead of wholesome blood, vitiated humours were formed, and such a cacochymia followed, as very commonly terminates in a dropsy. He has observed, that a like depravation of the blood ensued, where persons indulged themselves intemperately in the use of spirituous liquors; for in this case the vessels are distended daily, the veins are turgid and inflated, and presently after, when these spirits are dissipated and exhaled, all the vessels collapse, and the unhappy persons need a new stimulus, to give them vigour for performing their usual functions.

Now it was demonstrated, §. 25. 3. that excessive tension of the solids first brought weakness upon them; when therefore the vessels are daily thus overstretched, they lose at last almost all their strength; and the paleness, lank cheeks, and trembling hands, too well declare the unhappy condition of those who constantly indulge themselves in drinking spirituous liquors. The reader may look back to §. 605. 11. where mention is made of the pernicious consequences of intoxication. Besides, great thirst generally follows drunkenness, which makes them who have been intemperate, drink plentifully of water, which cannot be subdued nor expelled by the weakened vessels; wherefore, being collected in the cavities of the body, it produces various species of dropsies.

It is evident therefore, that a weakness of the viscera and vessels is justly accounted one cause of a dropsy;

dropsy; but this weakness is likewise sometimes an effect of a dropsy. We said, §. 30. that watery liquids weakened the fibres; and on the contrary, §. 35. that aqueous remedies internally and externally applied warm to over rigid fibres, restore to them their due flexibility. When therefore we consider, that in an ascites, all the abdominal viscera are for many months, nay for years, soaked in a warm watery serum, it is easy to see that there is reason to fear debility, as an effect of a dropsy. When we reflect, that in an anasarca the skin is prodigiously distended, and the adipose membrane filled with a watery humour, we shall not wonder, that when the water is drawn off, all these parts become flaccid; therefore after the evacuation, care is to be taken for corroborating these parts, and especially, if the evacuation has been sudden, either by tapping or by evacuating remedies. If, indeed, the dropsical swellings have gradually been diminished by dispersion, (§. 1248.) or by obstinate abstinence from drink, (§. 1249.) the solids have every day less and less tension, and insensibly contract by their own elasticity, and acquire their due tone.

By what method, and by what remedies, strength and firmness may be restored to the relaxed and debilitated solids, was explained §. 28.

But physicians have placed great and deserved confidence in the use of steel, either in substance, or dissolved in a vegetable acid<sup>a</sup>, especially with the addition of spices, and such other corroborative remedies as have a corroborative and astringent quality. In the *Materia Medica*, under this head, is a formula of such a medicated wine; where, however, it would have been better to order four pints of *Rhenish*, instead of two; for all these things act first on the stomach, and if they are strong, prove offensive to it.

Sydenham

<sup>a</sup> Boerh. chem. Tom. II. pag. 438, & seq.



Sydenham<sup>r</sup> advised the use of steel, not only to corroborate the body after the water was let out, but where it was in its beginning; *qui vel pedes tantum inflavit, vel etiam ventrem sed modice*; “when it has “swelled the feet only, or but very little swelled the “belly.” He says, that frequently warm corroboratives are sufficient, without using emetics or cathartics. He also observes as follows; *quoties hunc morbum solis corroborantibus vel etiam lixivialibus aggredimur; æger nullo modo expurgandus est, siue mitiori, siue fortiori pharmaco quocunque tantisper, dum sanguinis corroborationi navatur opera: evertet enim catharticum, quicquid corroborans extruxerit; quod vel invitius agnoscat oportet, qui observaveri, tumorem qui ab usu corroborantium jam jam imminui cæperat, mox a purgatione augeri*; “when “we attempt to conquer this disease, either by corroboratives or by lixivial preparations, the parties “must not be purged at all, neither with gentle nor “with strong physic, so long as we persist in our “intention of invigorating the blood: for a purge “overthrows all the benefit gained by the use of “corroboratives; which every one must needs own “who has observed, that a dropfical swelling, which “had gone down by the use of corroboratives, rises “again presently after purging.” But he here speaks thus of those cases in which there is room to expect, that a dropfy may be cured by the use of corroboratives alone. For when the cure is attempted by evacuating remedies, and the patient’s strength will not allow of purging every day, he does not disapprove the use of corroboratives on the intermediate days<sup>s</sup>: for, as was mentioned before, §. 1237. a woman was happily cured of a dropfy (both of an ascites and an anasarca) by drinking beer medicated with steel filings, ashes of broom, and mustard-seed, purges being however taken at intervals.

A dry diet should be ordered in this case, of biscuit, or at least well-leavened and well-baked bread,

VOL. XII.

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roast

<sup>r</sup> Tract. de hydrope, pag. 633.<sup>s</sup> Ibidem.



roast flesh of young animals, river-fish broiled; the drink should be sparing and strong; generous red wine also, which is likewise astringent, is likewise of great service; and that the flaccid intestines and stomach may be moderately stimulated, some acrid seasoning may be mixed with the food, such as mustard, horse-raddish, pepper, and the like; regard being had to the season of the year, and the age and constitution of the patient recovered of the dropsy.

But the greatest hope of preventing a relapse is placed in wholesome exercise; for nothing strengthens more, or disperses superfluous humours from the body. This was the reason why *Hippocrates*, in the passage quoted above, §. 1230. where he enumerates the signs which shew a possibility of recovery, mentions as one principal sign of this, the patient's being able to support fatigue easily; and, as was observed before, §. 1235. he enumerates vigorous exercise among the principal remedies for the cure of a dropsy. We read also of a fisher<sup>t</sup>, whose belly was prodigiously swelled, but who brought down the swelling by constant toil, and was perfectly recovered without any medicine.

We must not, however, conceal what *Celsus*<sup>u</sup> says of the dropsy; *inter initia tamen non difficilima curatio est, si imperata sint corpori, sitis, quies, inedia*; “however, in the beginning the cure is not very difficult, if rest, thirst, and fasting be strictly enjoined.” Of how much service thirst, obstinately endured, may be in a dropsy, we have already observed. *Hippocrates*<sup>w</sup> says, *corporibus humidis carnes habentibus, famem inducere oportet; famem enim exsiccat corpora*; “persons of a moist habit should fast, for fasting dries the body.”

Perhaps

<sup>t</sup> Marcell. donat. de med. histor. mirab. Lib. IV. Cap. xxi. pag. 235, versa. <sup>u</sup> Lib. III. Cap. xxi. pag. 161. <sup>w</sup> Aphor. lxxix. Sect. vii. Charter. Tom. IX. pag. 326.



Perhaps thirst and fasting may have been tried for the cure, although it is cruel to torment the patient in the beginning of this disease: but I remember no author besides *Celsus*, and he only in this place, who advises rest. Indeed the patients, enfeebled by abstinence from drink and food, can scarce be supposed able to bear exercise and motion. This method of cure seems to have been attempted in the friend of king *Antigonus*, since he swallowed not only his own urine, but also his malagmata<sup>x</sup>. But that *Celsus* considered exercise in other cases, appears from what follows<sup>y</sup>; *atque hic quoque, quæcunque species est, si nondum nimis occupavit, iisdem auxiliis opus est. Multum ambulandum, currendum quandoque, &c.* “and with regard to this, whatever species it is, if it has not got too great a root, the very same remedies are necessary. The person must walk much, run sometimes, &c.”

For corroborating the flaccid parts, bandages are of signal use, after that the water is quite evacuated, and the swelling has subsided; of whose great usefulness we made mention, §. 28. 3. It is likewise of service to impregnate these bandages in the aromatic fumes of *amber*, *olibanum*, *mastic*, *storax calamite*, *benzoin*, &c.

## S E C T. MCCLI.

**A** Tympany is cured by the same remedies and method, if it has been caused by the rarefied steam of the extravasated putrifying humour; for then this cause being removed, the effect ceases: but if it has arisen from air penetrating into the cavities of the body, through the membranes of the putrified intestines, and not able to return, but rarefying by the heat of

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the

<sup>x</sup> Celsus in the passage just quoted,      <sup>y</sup> Ibidem, pag. 162.

the body, then all the putrefaction soon becomes universal, the air accelerating it, and the disorder, from this supposed cause, is almost always incurable: whence a dry dropsy is accounted much more incurable than that which is from water. Puncture often suffices for relief, rarely for a cure: rollers are useful after the puncture.

Above, §. 1226. we treated amply of the tympany, or dry dropsy, and its diagnostics: we are now to consider the methods by which this distemper may be removed. We then observed, that there were two species of a tympany; for either the air is lodged at large in the cavity of the abdomen, or the intestines and stomach are distended and swelled with it. At the same time instances, on which one may depend, were brought to prove, that a tympany from air, occupying the cavity itself of the abdomen, was very rare; and that it much more frequently proceeded from the air distending the intestines and stomach. The signs were also then mentioned, by which we might distinguish these two kinds of tympanies.

It is known, that heat turns water into vapours, which occupy a much larger space than the water from whence they arose: hence, if part of the water contained in the cavity of the abdomen should be changed into vapour, the swelling of the abdomen in an ascites would be greatly increased. At the same time, in that chapter, we frequently took notice that the cavities of the body, in a natural state, were filled not with water, but with a subtle steam, which after death condensed to water. In treating of the cure of a dropsy, we observed that physicians endeavoured, by the heat of the sun, fire, &c. to change part of the extravasated water into vapours, because in this form it would seem more easy to be  
re-ab-



re-absorbed by the veins; and therefore, from such a rarefied vapour, a cure of this disorder might be expected, rather than an increase of it; for if this vapour, formed by the application of external heat, should not be re-absorbed by the abatement of the heat, it would condense into water, and thus no increase of the swelling would be caused.

But when we treated of eructations and flatulencies, it was proved, that great quantities of air lodged both in the fluids and solids of vegetables, and of animals, and was so inherent there in such a manner, that while it continued involved in them, it had no elasticity. At the same time it was shewn, that putrefaction dissolved this bond and connection of the air with the parts of our bodies; and that as soon as ever the air is set at liberty, it recovers its elasticity, and occupies a much greater space than before. If, therefore, the water contained in the cavity of the abdomen begins to putrify, a tympany may accompany an ascites; and, as was said, §. 1226. then if we strike the upper part of the abdomen, it will sound like a drum, and a manifest fluctuation of water will be perceived at the same time in the lower part of the abdomen; then especially the prognostic of *Aretæus*<sup>2</sup>, who pronounces all kinds of dropsies dangerous, but that a combination of them is worst of all.

Certainly if the air generated from putrefaction, being again become elastic, distends the abdomen, the source of this putridity; that is, the water extravasated and stagnating in the abdomen, must be removed; therefore, for curing the tympany in this case, the ascites itself must first be cured.

But how little hope will remain, when the liver and spleen have been long soaked in this putrid fluid? All will melt down into a putrid gore, and certain death ensues.

Tapping itself, although of its own nature it is a safe remedy enough, yet by giving admission to the

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external

<sup>2</sup> De caus. & sign. morb. diuturn. Lib. II. pag. 49.

external air, it will increase the putrefaction already begun. Nor will the other methods, mentioned in treating of the cure of an ascites, be more successful; for they are all violent, cause strong motions, and sometimes excite vomiting; which certainly is always dangerous, when the viscera, long soaked in the putrescent water, begin to be unsound. External heat, applied with an intention of dispersing the water, will, by the rarefaction it causes, increase the swelling. The thirst, which is always excessive when the water begins to grow corrupt, becomes absolutely insupportable; nay, the putridity will increase by abstinence from drink, as drink helps to wash off some part of the putrid matter from the body.

If the intestines being perforated by worms, or corrupted by a gangrene, the air gets a passage from thence into the cavity of the abdomen, it will there be more and more rarefied by the heat of the body, all things will soon grow corrupt, and scarce any hope it is evident will remain.

The reason therefore is clear, why physicians have almost always despaired of curing a dry dropsy. Whence *Aetius*<sup>a</sup>, *est autem tympanites omnino periculosus, minus eo ascites; adhibetur enim in eo pertusio sive punctio, quam Græci paracentesin appellaret, & reliquis quoque remediis, promptius quam ille obedit*; “a  
 “ tympany is always very dangerous: an ascites is  
 “ less dangerous, for therein we may use pertusion  
 “ or puncture, which the Greeks call *paracentesis*;  
 “ and it yields likewise more readily to remedies,  
 “ than does the forementioned disorder.”

But if the stomach and intestines, being enormously distended with air, cause the tympany, there is more hope, although this itself is a disease very difficult of cure. Before, §. 1226. we observed, that air existed in the stomach and intestines, but that it was so repress'd by the action of these viscera, that it could not distend them; therefore the expansive  
 force

<sup>a</sup> Serm. X. Cap. xx. pag. 234.



force of the air, and the contractile power of the intestines, may be considered as two opposite powers. If the contractile power of the intestines has the prevalence, their cavity is very inconsiderable. Wherefore, when an animal is dissected alive, on cutting open the abdomen, the intestines appear smooth and solid: in a carcase after death, the intestines are dilated, thin, and almost transparent.

In the chapter where we treated of eructations and flatulencies, it was shewn, that an irritating acrid cause so contracted the part of the intestines to which it was applied, that nothing can pass: when this happens in several parts, the intercepted air expands and dilates the cavity of the intestine prodigiously. This kind of spasm also happens in hysterical and hypochondriacal persons, from the passions of the mind, as all know. If now causes like these are either very violent, or very frequently repeated, or last very long, the contractile power of the intestines is either destroyed, or so much weakened, that the expansive force of the air has always the prevalence, and then a tympany will take place. We said, §. 1226. that the *intestina crassa* were sometimes so much dilated by a tympany, that they were as big as a man's thigh. If the distended intestines or stomach contracting themselves, expel the rarefied, or the rarefaction of the air itself be diminished by any cause, this occasions flatulences; the persons in whom they are frequent, are said to have a flatulent disorder: but if this flatulent humour remains obstinate, and the air find no passage, then a tympany subsists. Sydenham<sup>b</sup> was surpris'd to see, that in a dropical patient, from whom the water had been evacuated by powerful emetics and cathartics, the belly suddenly swelled again as much as ever, especially as he found, that on giving a purge or an emetic, the swelling rose even to the throat, and was accompanied with a difficulty of breathing; *donec corpus a purgantium molestia*

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<sup>b</sup> Tract. de hydrope, pag. 626, 627.



*molestia liberatum, statum naturalem ac quietem reciperet; quo facto & tumor, & cætera symptomata derепente evanescebant, donec a succedente catharsi denuo irritarentur;* “till the body is freed from the troublesome operation of the evacuating remedies, and recovered its natural tranquillity; whereupon the swelling and the other symptoms presently disappeared, till they were excited again by the irritation of another purge.” Wherefore, as after all the waters evacuated, the same troublesome symptoms lasted for a week after the last purge, he was obliged to give an ounce and an half of diascordium four nights running; and the dose was even to be repeated, if the patient did not get sleep in three hours after taking it: this appeased all the disturbance, and the swelling subsided. I have observed such a sudden swelling, after the water had been almost totally evacuated from the abdomen by diuretics, in a woman who had an ascites; I gave her an aromatic powder composed of the *species diagalangæ* & *cortex magellanicus*, and the swelling subsided in a few hours: this disease might have been called a tympany; for the abdomen when struck, resounded like a drum. But if the stomach or intestines remain long distended, the cure is often difficult, as these viscera then lose all their contractile power.

For the cure therefore of a tympany, it is requisite that the contractile force of the stomach and intestines be augmented; and that the rarefaction of the air contained in these viscera be diminished. Physiology<sup>c</sup> teaches us, that the stomach and intestines have a power, by which they press on their contents more, and squeeze from them all that is dissolvable, and urge on the remaining excrementitious part to the rectum, thence to be expelled from the body. But when this power of these viscera is diminished or destroyed, they are liable to be over-distended by the air, as sometimes happens in diseases at the approach

<sup>c</sup> Boerh. institut. med. §. 93.



proach of death, and is almost always observed after death. At the same time we mentioned, that by any acrid thing, or by a mechanically wounding cause, these viscera are so constricted, as to suffer nothing to pass through them; and hence they are capable of being amazingly dilated, by the intercepted air between the obstructed places. Wherefore, as was mentioned, §. 1226. costiveness, gripes, and pains of the loins, are wont to precede a tympany: for the same reason, it is reckoned a good sign in a tympany, if borborygms are perceived in the abdomen; for these shew, that the flatulent matter is agitated in the cavity of the intestines by the peristaltic motion, especially if flatulences break forth soon after the borborygms; for then the swelling will soon subside, by the intestines recovering their tone.

There seems to exist in a healthy state, a stimulus which excites the cavity of the intestines to contractions: most foods have either naturally, or acquire by delay, such an irritating quality. Whence from milk (which is so mild a food) turning sour in the stomach and intestines of young persons, so often proceed gripings of the belly, and a swelling of the abdomen. The bile in a sound state, which seems to have a greater acrimony than other healthy fluids, appears to have this effect. Heretofore, §. 312. where we treated of wounds of the abdomen, a remarkable instance was related of a soldier, the bottom of whose gall-bladder had been pierced with a wound, without any considerable damage being done to the adjacent parts. Presently the abdomen swelled, and the swelling continued till after his death. No eructations, flatulences, or borborygms were perceived; the belly remained constipated, although very sharp purges and clysters were administered. The irritation proceeding from the sound bile, is natural and useful to the body; and when the belly rumbles in hungry men, this seems to be occasioned  
by

by the bile overflowing into the stomach, or flowing through the intestines; for men in this case often belch a frothy humour, inclining to bitter taste.

From whence it appears, that the tympany may arise from the contractile force of the intestines in general being destroyed, or when the passage of the intestines is obstructed in some part of it; and hence the part above the obstruction swelling, loses its tone by being overstretched: whence in the bodies of those who die of this disease, the intestines are found greatly strained in some places, and enormously dilated in others. Hence, in the beginning of this disease, the spasmodic constriction must be relaxed, in order to prevent the excessive dilatation of those parts which are not constricted by the spasm. How and by what remedies this is to be effected, was mentioned in the chapter, wherein we treated of eructations and flatulences, particularly §. 650. But when a long dilatation (either in whole or in part) of the intestines, has entirely overcome their contractile power, then a stimulus is necessary to urge the sluggish fibres of the intestines to motion, and afterwards corroboratives, to restore the due tone and firmness of the dilated parts.

If now we examine what are the remedies prescribed by the most skilful physicians for the cure of a tympany, it will appear, that they are such as answer the indications we have mentioned. *Celsus*<sup>a</sup>, speaking of the cure of this disease, which he calls *inflation*, first seems to mention such things as are proper in the beginning of this disorder; for he says, *si ex ea (inflatione) dolor creber est*; “wherefore, if  
“there be frequent pain from it (*i. e.* from the in-  
“flation).” Now it was noted before, §. 1226. that gripes preceded a tympany, the flatulences being intercepted by spasmodic constriction in various parts of the intestines. Then he advises a vomit every day, or every other day, after eating, also dry warm fomen-

<sup>a</sup> Lib. III. Cap. xxi. pag. 163, 164.



fomentations, and cupping without scarrification. He goes on, *si ne per has etiam tormentum tollitur, incidenda cutis Et tum his utendum*; “if the pain does not yield to that, the skin must be cut, and the cupping instruments applied again.” If even this did no service, then the remedy was, *per alvum infundere copiosam aquam calidam eamque recipere*; “to inject into the belly plenty of warm water, and to take it back again.” All these methods seem adapted to relax the spasm; but when the intestines have remained long dilated, then there seems occasion for irritating remedies, that the fibres of the intestines, over-stretched and become almost paralytic, may recover motion: for he advises to apply mustard frequently to the belly, till it corrode the skin; nay, that ulcers should be made in the belly with hot irons, and that they should be kept open for some time. Boiled squills also bound on the belly, says he, are good<sup>e</sup>. Now, although these applications only irritate the external teguments of the abdomen, yet that an alteration is caused hereby in the internal, appears from what was said in the chapter concerning eructations and flatulences.

Some physicians have applied to the abdomen, water rendered extremely cold by ice or snow; and have also ordered it to be drank, with good success<sup>f</sup>. Certainly such a sudden cold contracts the solids, and at the same time checks the expansion of the flatulent matter, and thus is useful in two respects. Whence cold water, so applied, is deservedly esteemed a corroborative remedy; but as soon as the abdomen begins to subside, it should be supported with rollers, that the stomach and intestines may not  
so

\* This (says Dr. Grieve) seems a very odd way of using squills, the old reading appears much more just. *Utiliter etiam scilla costâ delinitur cutis*: “It does good also to rub boiled squills over the skin.” The same variety recurs at the end of the following paragraph; *sicut supra dixi delinitur*, instead of, *simul supra ventrem deligatur*. Grieve’s Celsus, pag. 161. <sup>f</sup> Combalusier Pneumato-pathol. pag. 428, & seq.



so easily be dilated again, but may resist the rarefied air which moves up and down their cavities.

We know, that the peristaltic motion of the intestines is so increased by the stimulating power of cathartics, that the fæces are the sooner excluded; whence physicians have employed these remedies: and some have recommended the most acrid<sup>z</sup> of them, such as *wild cucumber*, *orrice*, and *bind-weed*, joining with them aromatics and carminatives. But as not the whole intestinal canal is always distended in a tympany, but different parts of the intestines are frequently contracted: hence many have advised gentle purges, in small doses, joined with carminatives, merely to prevent absolute costiveness; for there is reason to fear, that the contraction may be increased in the obstructed places of the intestines by violent purges: and it has been observed, that carminatives, without some gentle purge, are prejudicial<sup>h</sup>. *Hoffman*<sup>i</sup> also seems to have apprehended danger from very sharp purges, in treating of this disorder; for he advises purging pills combined with anodynes, and at the same time directs, that the belly should be anointed with camphire dissolved in oil of almonds.

The rarefaction of the air in the cavities of the stomach and intestines, is to be diminished as much as possible: but the air, when it is imbibed together with the food, either is separated from the aliments at the time of digestion, in which it was before imperceptible through want of elasticity; or, which is worse, is in a putrified state. *Hales*<sup>k</sup> has shewn, that air is naturally inherent in bodies, and that it visibly constitutes a part of their bulk; and that the same air is again separated from them, when the connexions of the parts with one another are destroyed or diminished by fire, fermentation, putrefaction, effervescence, or other causes. He has in like

<sup>z</sup> Ibidem, pag. 467.

pag. 252, 253.

<sup>h</sup> Pringle, on the diseases of the army,

pag. 45.

<sup>i</sup> Med. rat. & system. Tom. IV. Part. 18.

<sup>k</sup> Vegetable statics, Chap. vi. pag. 309.



like manner demonstrated, that the air, by separation from other bodies, is rendered elastic; and when again combined with them, it loses its elasticity. He has also taken notice, that aqueous vapours diminish elasticity, whether they arise from pure water, or are exhaled from the bodies of animals: hence it is, that by respiration itself, the elasticity of the imbibed air is lessened. Now if we consider, that at the time of digestion the aliments are dissolved; that some tend to fermentation, others to putrefaction, a separation of the air from the food will be supposed of course to ensue: which, unless it be again absorbed, and by that means deprived of its elasticity by warm vapours exhaling from the extreme arteries into the cavities of the stomach and intestines, will distend these viscera, and so much the more, by how much the viscera are less firm; and by that means they will be less able to resist the expansion of the air. In healthy constitutions, during the natural digestion, more air appears to be generated than re-absorbed; hence all men are more or less swelled after eating: but in weak constitutions, troublesome flatulencies are occasioned, especially in those who have taken such food or drink as naturally contain much air, which is easy to be separated from them, or else they are very obnoxious to fermentation or putrefaction. From which it is plain, that to those who labour under a tympany, crude summer fruits, rape-roots, and raddishes, are pernicious.

Hales<sup>1</sup> found, that the steam of sulphur most powerfully absorbed the air, or diminished its elasticity. An accidental instance has shewn, that *spiritus sulphuris per campanam*, which is the condensed steam of sulphur, is of service in this case<sup>m</sup>. Francis Oswald Grombifus had in vain attempted to cure this disease by hydragogue purges; afterwards he ordered a fomentation made of the boy's urine and  
lapis

<sup>1</sup> Vegetable statics, Chap. vi. pag. 226.  
Pneumato-pathol. pag. 455.

<sup>m</sup> Combaluser

*lapis prunella*, having scarce any hope of a cure. The patient afterwards desired some remedy might be given him, which would assuage his unsupportable thirst. The physician had them at hand, *spiritus sulphuris campanam*, of which he directed him to put some drops into spring water. The thirst was not only appeased by this, but flatulences broke forth in great quantity; the belly subsided, and the patient was perfectly recovered. The efficacy of the steam of sulphur for preventing fermentation, or stopping it if already begun, is well known. Now fermentation generates great plenty of elastic air.

When the intestines have not yet lost all their contractile power, which is however too weak to expel the distending air, whenever the elasticity of the air is diminished by any cause, the contractile force begins to prevail, and expels the wind. This seems to have appeared in the cause above related; where by drinking plenty of water, with which was mixed *spiritus sulphuris per campanam*, the rarefaction of the air, which distended the intestines, was diminished, and the peristaltic motion had the prevalence. And this salutary effect seems also to have been promoted by this circumstance, that the intestines being now more contracted, the exhaling arteries became capable of emitting a warm watery steam, which likewise absorbs the air and diminishes its elasticity.

But all these things take place, chiefly when the elastic air moves up and down the cavity of the stomach and intestines, and cannot easily be expelled; for the intestines may also be the seat of an empyema. Anatomy teaches us, that the mesentery is formed from the duplicature of the peritonæum. When the mesentery approaches any of the intestines, these two folds of the peritonæum recede from each other, and inclose the intestine on all sides; so that the part of the intestine which is nearest to the mesentery, is covered by the peritonæum. But the cellular membrane of the mesentery, which lies between the duplicature



of the peritonæum, and usually appertains to the intestines, and is applied to that side of the intestine which is not covered by the peritonæum. This cellular membrane grows less and less conspicuous, in proportion as the peritonæum approaches more closely to the intestine, and at last quite disappears, and therefore does so surround the whole intestine: this is called the exterior cellular membrane. There is also another called the interior, placed under the muscular tunic of the intestines, which was formerly called the nervous tunic, but is truly cellular. In both these tunics an emphysema may arise, as well as every where else all over the body; and such a disease has been observed<sup>n</sup> to exist, as the intestines have been found occupied by such an emphysema in many places: and an emphysema has been seen, not only on their external surface, but within (when the intestine has been turned inside out) also a swelling of this kind has been found exactly in a correspondent situation to that without: and some of these tumours were so protuberant, that they almost stopt up the whole intestinal tube. Anatomical experiments also shew, that air blown in through the exterior cellular membrane of the intestines, distends also the interior cellular membrane: and other viscera have also been observed to be affected with an emphysema. I remember to have seen such a small emphysema in the convex surface of the liver under the external tunic. But, which is much more wonderful, in a man who died suddenly of a violent cough, after death, *inventus fuit pulmo totus durus inflatus, validè elasticus aër inter membranam pulmones investientem effusus multas diversæ magnitudinis bullas effirmavit. Nulla pressione aër per asperam arteriam expelli potuit pulmo in frustra dissectus nequaquam collabebatur; & omnia frustra æque inflata & elastica permanserunt*<sup>o</sup>; “ the lungs were found all over  
“ hard,

<sup>n</sup> Combalusier Pneumato-pathol. pag. 18. Comment. academ. petropol. Tom. V. pag. 213.  
<sup>o</sup> Storck ann. med. pag. 115.



“ hard, inflated, and very elastic; the air effused  
“ between the membranes, which invests the lungs,  
“ had formed many bladders of various sizes; the  
“ air could by no pressure be expelled through the  
“ wind-pipe; the lungs, when cut into bits, did  
“ not at all collapse, and all the bits remained  
“ equally inflated and elastic.”

If now such an emphysema occupy the intestines, the swelling of the abdomen will not indeed be so considerable, as is observed in the former kinds of tympany, but the same treatment will be proper. The cure however will be more difficult, as the remedies taken, while they pass through the cavity of the intestines, can exert but little force on such an emphysema.

Is there room for puncture, if the tympany yield to no remedies? If the tympany occupies the cavity of the abdomen itself, it is easy to see that little is to be hoped: the patient may perhaps be relieved from the troublesome tension occasioned by the air; but as the putrid source remains, it will produce the tympany again. It is true indeed, that the abdomen may be supported by rollers, as was mentioned in treating of the cure of an ascites; but if elastic air be generated again in the cavity of the abdomen, it will occasion such an oppression and difficulty of breathing, that the constriction of the abdomen by rollers will not be supportable.

But if the air lodge not in the cavity of the abdomen, but in the stomach and intestines, puncture will not discharge it, unless these viscera be pierced. Before, §. 316, when we were treating of wounds in the abdomen, it appeared that surgeons, when any one of the intestines were swelled and distended with air, pricked it with a needle, that it might collapse; without which it could not be replaced in the cavity of the abdomen: and at the same time it was said, that *Paræus* had performed such punctures with success. But these were very small wounds,  
and



and such as, when the intestine contracted itself again, would entirely disappear, which certainly cannot be expected in a tympany; for tapping must be performed on the abdomen with a larger needle, as there often issues forth a quantity of water together with the air; and the intestines having for a long time been distended with air, have lost much of their contractile force; and the contents of the intestines might get into the abdomen, through the hole made by the trocart in the intestines; which contents corrupting there, would produce new and incurable evils.

Monf. *Combalusier* discourses very prudently of the puncture of the abdomen in a tympany<sup>p</sup>, and justly observes, that we have no experience of the operation of tapping with success in a tympany. The puncture was made in a patient's breast, which was thought to be full of pus; and instead of pus, air rushed forth with a great noise, and the patient recovered<sup>q</sup>. An attempt of this kind would be hazardous; but where certain destruction is at hand, a doubtful remedy may be tried, the physician forewarning the patient of his extreme danger, that his own reputation may be safe. Tapping should in this case be performed in the same method, and with the same cautions, as were mentioned in the treatment of an ascites. The trocart however should be here of a less diameter, that so small a wound may be inflicted on the intestine, as may more certainly and speedily close, than if a larger needle were employed.

<sup>p</sup> Pneumato-pathol. pag. 506.      <sup>q</sup> Ibidem, pag. 508.

## S E C T. MCCLII.

**T**HE first kind of hydrocele (1227.) is cured, 1st, by curing the anasarca (1231. to 1248.) whose offspring it is. 2d, By the remedies mentioned §. 1248. 3d, By powerful discutients and corroboratives combined, applied to the scrotum, and excited into more vigorous motion and action, by external heat.

The second kind (1227.) will be best cured, 1st, If the hernia be perfectly and radically cured by surgery. 2d, By removing the material cause of the ascites (1238. to 1252.) and stopping the source of it. 3d, Also by pressing the passage by which the swelling descends, with trusses, as in ruptures: but a dropsy once formed here, is seldom perfectly cured.

The last kind (1227.) is to be cured, 1st, By strong hydragogues frequently repeated, and a dry diet. 2d, By proper discutients and corroboratives. 3d, By puncture in the scrotum. 4th, By caustics and suppuration.

We spake before, §. 1227. of the different kinds of hydrocele, as also of the signs by which they might be distinguished. We then saw, that the first kind was a true anasarca, and rarely occupied the scrotum, unless the rest of the body were affected by it: therefore all that relates to the cure of an anasarca, takes place here. And there is also this convenience in this kind of hydrocele, that as the whole scrotum is prominent, it may be wrapped quite round with discutients and corroboratives, and lies open for using steams from burning aromatic amber, mastic, and the like.

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The second species, §. 1227. was that in which the bag formed from the production of the peritonæum in a rupture, was filled by the water occupying the cavity of the abdomen, if an ascites; or by elastic air, if a tympany accompanied these ruptures. The cure of such a disorder is to be obtained by radically curing the hernia; which is done when the intestine or caul inclosed in the bag of the rupture, are not only replaced in the cavity of the abdomen, but also the sides of such bag grow close together, so that nothing can enter it again. But it is obvious, that the radical cure of the rupture is scarce to be attempted, till, by the removal of the ascites or tympany, the swelling of the abdomen has subsided; therefore the cure of these must precede. It is indeed true, that by trusses the place may be so compressed, after the reduction of the rupture, that the bag of the peritonæum will no longer admit a part of the intestine, or of the omentum; but it will be much more difficult to hinder the water from sliding into it, if the abdomen be full of water; besides, the belt which supports the trusses, and keeps them in their place, can either not at all, or with the greatest difficulty, be put round the distended abdomen: from whence it appears, that an hydrocele arising from this cause, can seldom be perfectly cured, unless the water of the ascites be entirely evacuated; for if even a small quantity of water be left in the abdomen, or if, after it has been all discharged, more collects there, (the cause of the dropsy not being radically removed) it necessarily tends to the lower part of the abdomen by its weight, and distends the hernious bag afresh.

It remains therefore only, that we treat of the last species of the hydrocele, described §. 1227. wherein the water is collected, and lodges in the *involutum vaginale*. The cure of this is to be attempted by the following methods.

1. By hydragogues, &c.] Of this method mention was made, §. 1247. If as good observations have shewn the abdomen filled with water can be emptied by purges, we may with much more reason hope such an effect in an hydrocele, when frequently the rest of the body is healthy; especially if hydragogues are administered in the beginning of the disorder, together with an exsiccating diet. I have seen the cure of an inveterate hydrocele attempted by purging, but never with success: for the containing parts are so altered by the excessive distension they have undergone, that there seems scarce any room to hope that the water should be re-absorbed: which re-absorption however is absolutely requisite, in order that the water contained in the *tunica vaginalis testis* may be evacuated by cathartics.

2. By powerful discutients, &c.] This method is often very serviceable, especially in the beginning of the disease: but as an hydrocele is not very troublesome at first, the patients scarce fly to such helps till the swelling is come to a great size. Discussants and corroboratives, as we said before, may be applied at will all round the scrotum. Very efficacious prescriptions are to be found in our author's *Materia Medica* under this head: for instance; a poultice composed of powerful discutient simples, then a corroborative and discutient fomentation. The use of decrepitated sea-salt perfectly dried, is also recommended, as powerfully drawing the water from other bodies to itself, as we have already mentioned. Lastly, we find there a fumigation composed partly of corroboratives, and partly of discutients, which is also of signal efficacy.

In young boys, and sometimes in new-born children, I have frequently observed such an hydrocele beginning; and this disorder was soon and happily cured by the use of such a fumigation. Dr. Monro<sup>\*</sup>

also

\* Medical essays and observations, Tom. V. Part. I. pag. 312.



also cured this disease in new-born children, by applying to the part a flannel impregnated with the steam of burnt benzoin. But at that age all the vessels are free and open; whence there is great reason to hope, that the water may be re-absorbed. Nay *Hippocrates*\*, when he enumerates the diseases to which those who inhabit a northern city are liable, says, *pueris autem hydropes in testibus fiunt, quamdiu parvi fuerint, qui deinde ætate procedente evanescunt*; “children while they are little have hydroceles, “which, as they grow up, disappear.”

But when the disorder is grown inveterate, and the scrotum is swelled with water to a vast size, and the former methods have been tried without success, then the tapping of the scrotum takes place. Although formerly the waters were often discharged by pricking the scrotum with a lancet, yet now almost all surgeons chuse to employ the trocar; but the needle must be less than that employed in tapping the abdomen. Care must be taken not to injure the testicles, or the spermatic chord; for it sometimes happens, that an hydrocele is the consequence of a schirrus of the testicle, which indeed may be known from the history of the disease; but sometimes ignorant men apply for help when the disease has been of long standing, who have not been attentive enough to be able to remember what were the symptoms in the beginning of the disorder. It is true indeed, that if the water is transparent, and a candle be put in a dark place behind the swelled part, that then the whole bag is pellucid, and the testicle may easily be discerned and avoided: but sometimes it happens, that the waters are opaque and turbid, and then nothing can be distinguished.

I have seen the operation performed on the scrotum successfully in the following method: the patient stood upright and straddling with his legs, a soft ban-

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dage

\* De aëre, aquis & locis. Textu 21. Charter Tom. VI. pag 192.

dage of two fingers breadth wrapped round the penis and the top of the scrotum, the ends of which bandage the patient himself held, and drew as tight as he could bear it, without making it painful; to the end that the lower part of the scrotum might be so much the more stretched. This done, a candle being placed behind the patient, if the water was transparent, the surgeon fixed the needle in the anterior and interior part of the scrotum, in such a direction as that the point tended outwards: then the needle being drawn out, the water rushed forcibly thro' the pipe. This water is generally of a colour approaching a citron colour, and unless the scrotum has been distended enormously, and for a very long time, it contracts and wrinkles up in proportion as the water flows out; and sometimes with so much force, that I have seen the pipe, after the water was entirely evacuated, so pinched, that it was difficult to get it out. On this account it is usual to smear the pipe with oil of almonds, that it may be drawn out afterwards with less difficulty. The little wound made by the puncture becomes imperceptible, as the scrotum shrinks up, and requires nothing to heal it; so that the patients are able to return to their usual employments, as soon as they have been eased of this load.

But as the veins are often varicose and turgid in the distended scrotum, care is always taken that the needle shall not injure these veins. It is true indeed, that when the scrotum contracts after the water is let out, the orifice of the wounded vein is also diminished; but there is a danger lest the contraction of the wrinkling scrotum should place the wound made in the vein in such a situation, that it may drop the blood issuing from it into the cavity of the *tunica vaginalis*, which would occasion new complaints: for certain experience has shewn, that an hæmorrhage sometimes follows the puncture of the scrotum, although this operation has been ever so skillfully performed. The puncture of the scrotum being made  
for



for the fourth time (for there was a necessity of repeating it every year) in a man of sixty years old, when twenty-three ounces of water had been let out, after a few minutes about twelve ounces of pure blood flowed forth in a full stream: after copious bleeding in the arm, this hæmorrhage ceased: the next morning the scrotum swelled more than before: it was concluded to cut the scrotum; and an incision two inches long being made, the *tunica vaginalis* appeared sound, but greatly distended, which being likewise cut, a great quantity of congealed blood came out, and more was drawn out by the fingers. As the testicle, and its vessels, and all the adjacent parts, appeared sound after the blood was wiped off, there seemed great hopes of a cure; which also was effected in three weeks time; nor did the hydrocele return for three years afterwards. I have seen a similar case, but there the hæmorrhage (which was pretty copious) came on later, namely the next day; and stopping from time to time returned several times, and then ceased, although the wound was not dilated, but only corroborating fomentations applied to the scrotum. Whether are the vessels which have long been soaked in the surrounding water, and consequently weakened, ruptured, when this support is removed? This seems probable enough, as the hæmorrhage did not immediately follow on the puncture, but after a considerable interval of time.

But, as was said in the cure of an ascites, tapping lets out the collected water, but does not remove the cause of the disease. Some instances shew that hydragogues, purges, corroborative remedies applied to the scrotum, and a truss, have prevented a return; for the most part the disease is used to return, as the patients after the puncture being relieved from their load, neglect the advice of their physicians; although we must confess, that even those patients

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have

have relapsed, who have been most observant of our directions.

But as the puncture of the scrotum is neither very painful or dangerous, if skilfully performed, many of those who are troubled with an hydrocele, had rather undergo puncture than submit to the radical cure; of which we shall presently speak. Puncture of the scrotum is therefore called the palliative cure. I have known many who needed the repetition of the puncture once, twice, or thrice in a year. Our archbishop had such quick returns of the hydrocele, that he was obliged to have the scrotum pierced every month, for the space of three years.

But when the patients can no longer bear the trouble of repeated punctures, or the disease growing inveterate, the water issues no longer clear but turbid and vitiated, then the radical cure is required.

4. This radical cure consists herein, that all exhalation of humour into the *tunica vaginalis* be hindered; which end will be obtained, if the *tunica vaginalis* be made to cohere with the testicle, by exciting an inflammation, and in consequence a suppuration (after the water is let out) all round the *tunica vaginalis*, and nervous tunic of the testicle, that these parts being cleansed from the pus, and all dead skin separated from them, may grow close together, and thereby the whole cavity, which was the seat of the hydrocele, may be abolished.

Celsus<sup>u</sup> makes no mention of the puncture of the scrotum to let out the water, but describes only the radical cure, which he advises should be attempted even on children. But we have already seen, that a perfect cure may be hoped in young persons without this method. But Celsus orders the membranes which contained the humour to be cut away; which shews this was a troublesome and painful operation.

Surgeons

<sup>u</sup> Lib. VII. Cap. xxi. pag. 468.



Surgeons of note have advised various methods. Some cut the scrotum with a lancet almost down its whole length; others have rather chosen caustics to make the opening, as the patients are frequently too much afraid of incision; and the scar produced by the caustic raises an inflammation, and afterwards a suppuration all round, which are reckoned necessary circumstances in this method of treatment. Mr. *Sharp* <sup>w</sup> prefers simple incision, which by many experiments in the course of a few years, he has found to have good success. Sometimes, when the scrotum is enormously swelled by the hydrocele, that there is scarce room to expect that it will shrink up sufficiently, a part of the scrotum is cut off down the whole length of the swelling, so that such an elliptical segment at its least diameter is an inch, or an inch and a half broad. This author tells us however, that it has happened but three or four times that such an excision was requisite; namely, when there were fleshy concretions in the *tunica vaginalis*.

*Heister* <sup>x</sup> says that he had employed the potential cautery with good success, and had never observed any bad consequences from it. Both these methods have many eminent surgeons for their defenders. *Bertrandi* <sup>y</sup> thought it safer, when the hydrocele was of a great size, first to let out the water by puncture, then to use a truss and apply corroboratives; when the hydrocele began to swell again, before it had arrived at its former size, he repeated the puncture once or twice more, and then proceeded to the radical cure. And he very prudently considers that there is less room to fear an hæmorrhage or mortification, if the strength of those parts, which have been so prodigiously distended, be gradually increased before the incision is made on the scrotum. This excellent surgeon has many

<sup>w</sup> A critical enquiry into the present state of surgery, page 87.

<sup>x</sup> Institut. Chirurg. Part. II. Sect. 5. Cap. cxxii. pag. 847.

<sup>y</sup> Mem. de Académie Royale de Chirurgie, Tom. III. pag. 111.

many other very useful observations on this disease, which deserve to be read.

After the scrotum has been opened, either by cutting or the potential cautery, all agree that a slight inflammation and suppuration must be raised, that the sides of the bag (when the pus of the suppuration is cleared away) may so cohere to each other, and to the adjacent parts, that the whole cavity which was the seat of the hydrocele may be abolished. *Celsus* <sup>z</sup>, as we have seen, directs that the membrane which contained the humour should be cut away. He adds, *deinde eluendum id ex aqua quæ vel salem adjectum vel nitrum habeat*; “ then it must be washed “ with water, with the addition either of salt or “ nitre.” Others have injected spirits of wine, but a violent inflammation has ensued, not without danger to the patient, which was with difficulty allayed by copious and repeated bleedings: on which account the ablution was afterwards attempted with red wine, which succeeded better <sup>a</sup>. The same intention of making these membranes cohere, has also been pursued by the use of suppurating, and lightly, corrosive medicines especially: it has been frequently observed to happen, that the *tunica vaginalis* is grown very thick after the hydrocele has lasted a long time.

That great caution is requisite here, appears from hence; that most eminent surgeons, *Sharp*, *Bertrandi*, &c. warn us, that an inflammation excited in the *tunica vaginalis*, is sometimes accompanied by so violent a fever, together with a delirium, spasms of the abdomen, and other bad symptoms, that the patient is in manifest danger of losing his life. Nay, Mr. *Sharp*, although he had seen all the patients escape, yet confesses that this fever is more terrible than that which usually follows the extirpation of the testicle. Hence fearing excessive irritation, and its most pernicious

<sup>z</sup> In the place quoted above.  
<sup>a</sup> dropy, pag. 165.

<sup>a</sup> *Monro's essay on the*



noxious consequences, he condemns the cruel method of those, who, after cutting the scrotum, try to tear off the *tunica vaginalis*, thinking it to be a morbid cyst, in which the dropfical humour was lodged. The whole hope of a radical cure seems to depend on a mild suppuration, a gentle irritation therefore is requisite. That which is violent is not without danger, whether very acrid remedies, laceration, puncture, or the application of heterogeneous bodies (for such various methods have been tried by different practitioners) be the means used to excite it.

## S E C T. MCCLIII.

**F**ROM whence lastly it appears, that in the cure of a dropfy there is more difficulty from the disposition of the water grown putrid by stagnation, than from the primary causes; and hence we may answer these questions: Why, by letting out the water, the mortification of the part which before swam therein is accelerated? Why, on suddenly letting out the water from the thorax or abdomen, death, or at least a syncope ensues? Whence the excessive thirst of dropfical persons proceeds? and what it denotes? Why acids are so frequently of service in this disease? Why, when a great quantity of water is discharged at once, by means of powerful evacuating remedies, the swelling of the abdomen persists the same, or even increases? Why it subsides by the use of opium? Why rollers are of so great advantage? and to what degree?

Some corollaries now follow, which are easily understood from what has been said already.

In the cure of a dropfy.] If we look back to what was said §. 1229. of the causes of a dropfy, it will

will appear that many of them may be overcome, or at least may be borne a long time without great injury; but if the water is become putrid, the viscera will be tainted and waste away, and death will inevitably soon follow.

Why by letting out the water.] When the viscera have long been soaked in the mass of water, these vessels lose almost all their tone, and can scarce any longer resist the impulse of the fluids. So long as the vessels are supported by the equable pressure of the water, the bursting of them is prevented, and this compensates for the weakness of the vessels; but as soon as the water is discharged, the vessels either burst, or at least their weakness renders them incapable of moving the contained fluids; whence the vital motion of the fluids through the veins and arteries is destroyed, and therefore a mortification follows. See §. 419.

We have observed already, that there was room to fear this bad consequence. That delicate membrane the retina, the smallest abortive embryos, when immersed in water, are sustained by the equable pressure of the surrounding fluid, and we can conveniently inspect their structure; but if they are taken out of the water, they collapse into a mucous jelly without any distinguishable figure.

Why on suddenly letting out, &c.] There is less danger in tapping in the thorax, if the lungs be still entire, and capable of being expanded by the air drawn in; because in this case the breast remains still full, the air entering in the same proportion, as the water collected between the pleura and the lungs is discharged by tapping. The cautions to be observed in this case were mentioned §. 1219.

But in the abdomen, unless the flaccid parts are braced by rollers drawn gradually tighter and tighter, all the blood rushes in the vessels now unresisting, the pressure on them being removed; the vessels of the cerebrum and cerebellum are not filled, whence a  
syn-



syncope and sudden death may follow; and much more if the vessels are burst. Concerning this see what was said §. 1240.

Whence the excessive thirst, &c.] When so great a quantity of watery serum is collected in the cavities of the body, the blood is deprived of its diluting vehicle, whence the fluids become unfit for circulation; hence arises thirst, which augments when the water grows putrid. See what was said concerning this thirst, §. 1220.

Why acids, &c.] Because they appease thirst, promote urine, and prevent putrefaction.

Why when a great quantity of water, &c.] Above, §. 1251. it was shewn, that *Sydenham* had seen cases, wherein, after the water had been discharged by powerful evacuating remedies, the abdomen was as much swelled as before; but this new swelling was not from a new collection of water, but from wind distending the stomach and intestines. For such spasms sometimes follow the use of strong purges and emetics as contract the intestines, and thus shut up the air within them; which rarefying by long delay is capable of causing wonderful swellings, such as are frequently observed in hysterical women. And such troublesome flatulent swellings also sometimes follow the operation of the paracentesis, and that presently after<sup>b</sup>; but opium happily removes such spasms, and a swelling of this kind soon disappears, as *Sydenham* also experienced.

Why rollers, &c.] How necessary the swathings and pressure of the belly is, while the waters are flowing out of the opening made by tapping, has already been observed: but even after all the water is let out, it is necessary to strengthen and brace the parts distended before, and now flaccid; whence the use of rollers was recommended §. 28. for strengthening weak and lax parts. When in an anasarca of the thighs and legs, either spontaneously or by art,

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<sup>b</sup> De Haen Rat. Med. Part. IV. pag. 80.

the water issues through openings of the skin, unless we brace the flaccid integuments of these parts gradually by bandage, there is a danger least all things should begin to stagnate and a mortification should follow, or a new load of water should be collected in the flaccid parts.

But rollers are only to be used while the water is discharging in the paracentesis of the abdomen, or after it is evacuated in a dropical swelling of the lower limbs: for it is not at all safe to press the swelling parts tight with bandages, with an intention to repel the extravasated fluid; for if we succeed, that which was repelled would almost always occupy the more internal parts. Before, in treating of a dropsy of the chest, we observed, that a sudden swelling of the legs and thighs frequently relieved the oppression on the breast; but that on the disappearing of this swelling of the lower limbs, the breast was so loaded and straitened, that there seemed danger of instant suffocation. In such a case it is apparent, that rollers would be hurtful.

We observed before, §. 1229. that a dropical swelling of the feet sometimes came on after long intermitting fevers; and as *Sydenham* saw that then the fever left the patient, he thought some of the morbid matter was deposited in these parts; wherefore he did not then pursue the treatment proper for the dropsy to subdue these complaints, but successfully removed them by frictions, and a medicated wine, in which bitters and aromatics are infused. I have sometimes seen that in rheumatic autumnal fevers, towards the end of the disease, when the *vis vitæ*, tired out by the length of the disorder, did not retain sufficient force entirely to expel the conquered enemy, an anasarca of the feet and legs followed, the *materia morbi* being deposited towards these parts; which it would therefore have been very imprudent to repel into the internal parts, by the use of rollers.



# I N D E X

## TO THE

## TWELFTH VOLUME.

### A.

**A**NASARCA page 305—  
 Ascites 312—336

### B.

Balsams 82, 83  
 Bark, its efficacy in an hæmop-  
 tyfis 72  
 Bleeding, useful in an hæmop-  
 tyfis 65—69  
 Blisters, useful for the discharge  
 of the water in a dropsy from  
 the smaller cavities of the  
 body 448  
 Borborygms, a good symptom  
 in a tympany 345

### C.

Cathartics, their use in a dropsy  
 513—519  
 Consumption. See Phthisis  
 Cough, to be appeased in an  
 hæmoptysis 221  
 Cupping, useful in an anasarca  
 493, 494

### D.

Discutients, their use in an hy-  
 drocele 546  
 Dispersion of the water in a  
 dropsy, how effected 519—  
 528

Diuretics, their use in dropsies

Drink, abstinence therefrom 500  
 prescribed in dropsies 524  
 Dropsy, defined 226  
 ——— its seat 230  
 ——— its causes 365—391  
 ——— effects and progress 391—414  
 ——— cure 414

### E.

Emetics, their use in dropsies  
 508—513  
 ——— sometimes act as purges 512  
 ——— also promote the dis-  
 charge of urine 513

### F.

Flatulencies 535

### G.

Gripes, sometimes precede a  
 tympany 341

### H.

Hæmoptysis 4  
 ——— its causes 4—48  
 ——— described 48—64  
 ——— cure 65—96  
 Hydatids 328—331  
 Hydrocephalus 232—252  
 Hydrocele 351—364

### I.

# I N D E X.

## I.

Jaundice, one remote cause of a dropy 376  
 Issues, their use in dropies 491

## L.

Lungs, sometimes the seat of a dropy 275

## M.

Milk diet recommended in consumptions 214—217

## P.

Palliative cure of a consumption 221  
 Pericardium, sometimes the seat of a dropy 232  
 Peritonæum, dropy thereof 320, 321  
 Phthisis Pulmonalis, defined 1  
 ——— its causes 4, 20, 27, 32

Phthisis Pulmonalis, effects and progress 122—159  
 ——— prognostics 159—168  
 ——— its cure 168—222  
 Phthises, other kinds of 223  
 Phthisis, the word, its etymology 1  
 Phthoe 2  
 Puncture of the scrotum, how performed 549, 550

## T.

Tapping, how and with what precautions to be performed 466—473  
 Tympany 334—350  
 ——— how to be treated 531

## U.

Urine increased, discharge thereof salutary in a dropy 500  
 Uterus, dropy thereof 286—293

END of the TWELFTH VOLUME.

















